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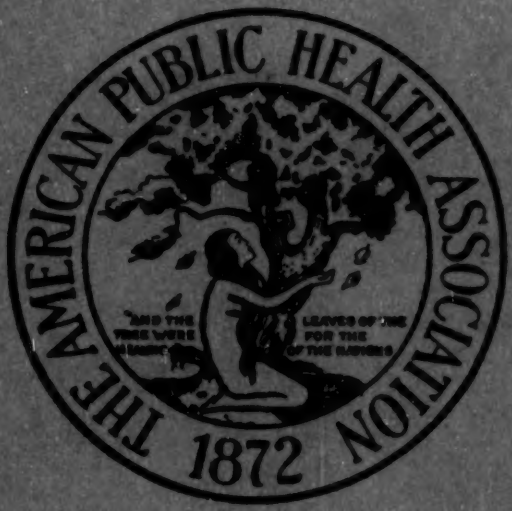

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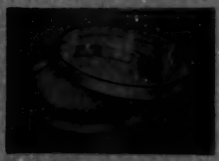

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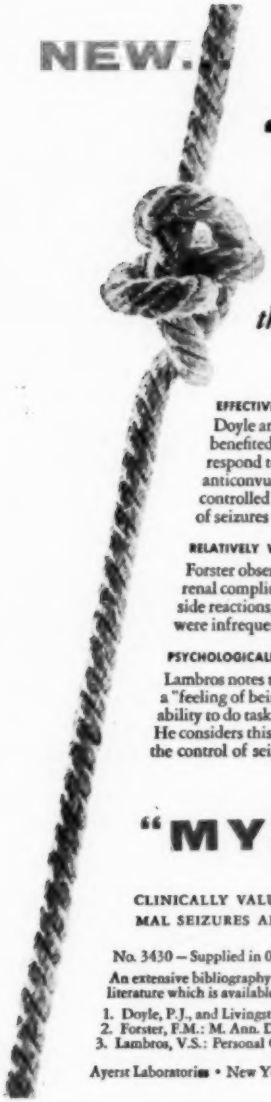

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1. Doyle, P.J., and Livingston, S.: J. Pediat. *43*:413 (Oct.) 1953.
2. Forster, F.M.: M. Ann. District of Columbia *23*:137 (Mar.) 1954.
3. Lambros, V.S.: Personal Communication.

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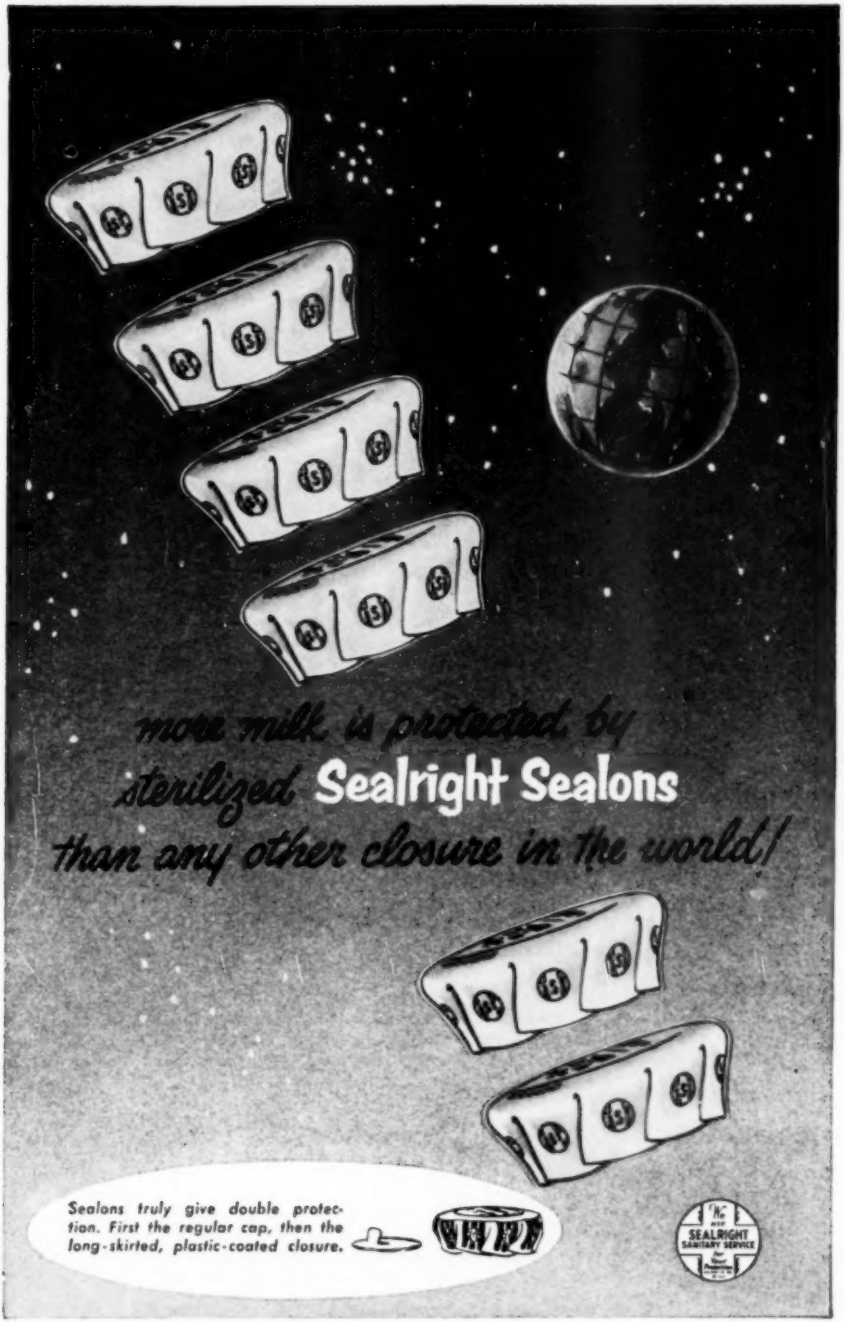
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1. Editorial: The Lancet *266*:350 (Feb. 13) 1954.
2. Stollerman, G. W. et al.: Am. J. Med. 15:645 (Nov.) 1953.
3. Wood, H. F., and McCarty, M: J. Clin. Investigation *30*:616 (June) 1951.

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*Kirsner, J. B.; Brandt, M. B., and Sheffner, A. L.: Diet and Amino Acid Utilization in Gastrointestinal Disorders, J. Am. Dietet. A. *29*:1103 (Nov.) 1953.

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(1) Hopkins, J. G.: AMA Arch. Dermat. & Syph., 67:479-483 (1953).
(2) Sullivan, M., and Bereston, E. S.: J. Invest. Dermat., 19:175-178 (1952).

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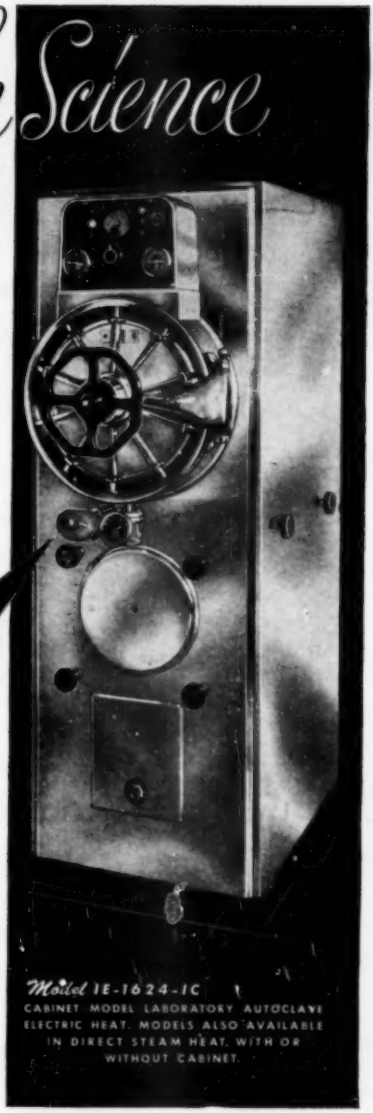

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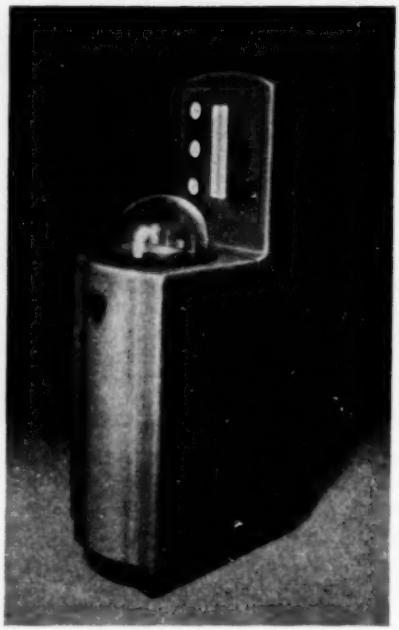

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Volume 44 August, 1954 Number 8

Viewpoints on the Problems of Chemicals in Foods

Some New Questions Relating to Chemicals in Foods

FRANKLIN C. BING, Ph.D., F.A.P.H.A.

Six viewpoints on the public health problems posed by the addition of chemicals to foods are combined here to create a useful background picture. The constituent papers of this symposium are rigorously condensed—eliminating inevitable duplications and concentrating the discussion in each upon the topic which the author is seemingly best equipped by experience to present.

The Food and Nutrition Section of the American Public Health Association in 1949 established a Committee on Chemicals Introduced in Foods. The following members have served continuously since the establishment of this committee: William J. Darby, Jr., M.D.; Smith Freeman, M.D.; Robert W. Pilcher, Ph.D.; Bernard E. Proctor, Ph.D.; Harold R. Sandstead, M.D.; Henry T. Scott, Ph.D.; and Franklin C. Bing, Ph.D., Chairman.

One of the first actions of this committee, after its organization and its initial study of the subject, was to recommend that the Federal Food, Drug, and Cosmetic Act be amended to require the consideration and the approval, prior to use, of chemical additives to foods. This recommendation became the official attitude of the American Public Health Association when the Governing Council adopted by unanimous vote a resolution to that end. In the fall of 1950 this resolution was presented in testimony before the Select Committee of the U. S. House of Representatives, the Delaney Committee, established to investigate the subject. Since 1950 the Delaney Committee has rendered its reports to the Congress, and one of its recommendations is, in effect, that evidence of the safety of food addi-

Dr. Bing is consulting chemist and lecturer in physiology, Northwestern University, Chicago, Ill.

This paper was presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

tives be subjected to scrutiny and approval be required before their use is permitted in foods. Legislation directed to that end has been proposed.

In my opinion, recent developments indicate that the maintenance of the integrity of foods involves not only consideration of new chemical additives but possibly it also requires a re-examination of some of the ingredients commonly used in foods for years. The unexpected observation that coumarin, a synthetic organic chemical used in artificial vanilla flavors, could be damaging to the livers of experimental animals is a case in point. The manufacturers commendably took steps at once to inform the government regulatory officials and coumarin as a flavoring agent was removed from the market.

There can be little doubt that additional study of some chemical additives currently in use in the production and processing of foods could well be made. One problem which should not be overlooked in considering chemical additives is that presented by the use of unusual products of plant or animal origin. During and following World War II noteworthy technological advances in engineering and in the fermentation industries have made it feasible to consider the production and harvesting on a large scale of dried bacteria, species of yeast which may not have the full beneficial value of ordinary yeast, and other forms of plant life. A limited number of animal feeding tests have been made with dried algae, and in a sanitarium for leprosy in South America some human subjects have been fed a soup containing mixed algae and other plankton with no indications of harm.

The possibility of securing a new source of food from the plankton of the ocean, or of growing foods in ditches in otherwise barren soil, is novel. It appeals to writers of articles for the general public and it is intriguing to scientists interested in the problem of feeding a larger population in the world of the future. What is distressing to note on reading some of the popular and scientific essays on this subject is the lack of awareness of the necessity of careful tests to determine the safety of eating unusual forms of plant and animal life. Yet, we know that some plankton are poisonous and that paralytic shellfish poisoning may develop in persons who eat mussels that in turn have consumed certain dinoflagellate organisms found at times in the coastal waters of the Pacific Ocean. Any amendment to the Federal Food, Drug, and Cosmetic Act might well be made broad enough to cover not only the products of the chemical industry, but also new or unusual products of natural origin.

There is need for a major revision of the Federal Food, Drug, and Cosmetic Act to require pretesting and approval of food additives regardless of their origin. Authority to administer the law should be assigned to one agency with no reviewing body except the courts. There is also a need for sufficient financial provision to permit adequate enforcement of the broader law in the public interest.

Viewpoints on the Problems of Chemicals in Foods

Laboratory Problems in Establishing the Safety of Food Additives

BERNARD L. OSER, Ph.D., F.A.P.H.A.

No matter how thoroughly and objectively experiments to determine the safety of food additives are planned and no matter how carefully they are executed, factors of human judgment influence the evaluations upon which the final decision must rest. A further complication in toxicological investigations of foods results from their very purpose, viz., to establish safety. Measurement of relative degrees of toxicity of drugs or other substances, under specified conditions of administration, is a relatively simple matter as long as recognizable effects can be induced in laboratory animals. However, when the effects are obscure, subtle, or unrecognizable, even at dose levels many times those expected to be encountered in practice, it becomes difficult, if not impossible, to draw conclusions as to safety with the degree of assurance demanded in certain quarters.

Decisions based on experience must be made at all stages in any laboratory study designed to furnish the basis for estimating safety. In addition to animal experiments, many considerations of a chemical or technological nature have to be taken into account. These include the development of analytical procedures adapted to the determination of the test substance in the foods and at the levels proposed for use; the preparation of the food containing high enough concentrations of the test substance compatible with maintaining the identity of the food and its acceptance by the test animal; and similar problems of a nonbiological nature. However, for the rest of this discussion attention will be confined to the toxicological or animal aspects of the studies, per se.

Exploratory or screening tests are naturally much abridged with respect to number and species of animals and chronicity of the tests, as compared with the more definitive studies aimed toward final clearance. But even in the preliminary phases questions arise as, for instance, whether the criterion of toxicity of a single massive dose administered intragastrically to fasted animals is preferable to a few weeks' controlled feeding of the test substance in the diet.

The laboratory director or research administrator is confronted with the necessity of deciding when to inaugurate the more comprehensive and conclusive type of study in relation to the transition of the new additive during the production stage from the laboratory to the plant and the application stages from the manufacturer to the user. Elements of cost and time enter into decisions as to the nature and scope of toxicological tests, especially in the early history of the development of new additives. The

Dr. Oser is the vice-president and director, Food Research Laboratories, Inc., Long Island City, N. Y.

This paper was presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

Food Protection Committee of the National Research Council has taken cognizance of this problem in a recent statement, "Basic Considerations in the Development of a New Agricultural Pesticide Intended for Use in Connection with Food Production."

The choice of experimental animals presents no serious question. It is generally agreed that at least two species should be used in both acute and chronic tests and that they should not both be rodents. Rats, mice, guinea pigs, and rabbits (all rodents) serve in acute studies. However, species differences demand that other mammalian species be used. For acute as well as chronic investigations dogs, cats, or monkeys fill this role. Factors of cost, ease of handling, and knowledge of nutritional requirements usually direct the choice to the dog. But, despite the laudable efforts of the National Society for Medical Research, the use of dogs in certain areas invites unwelcome attention.

Even under the best conditions, however, variations are observed in normal animals due to strain, nutritional history (from prenatal existence up to the time of starting toxicological feeding tests), environmental conditions, and perhaps even psychic factors. Just as an occasional "normal" litter will contain a runt, an occasional individual animal will manifest a physiological or pathological deviation from its littermates maintained under identical conditions. It should be mentioned that in toxicological work of the type under consideration, genetic heterogeneity is to be preferred to homogeneity.

The incidence of renal calculi, mild hepatitis, glandular changes, or blood dyscrasias in so-called normal or control animals is often unknown because thorough search is not made for these unexpected conditions. Yet, even when the incidence of such findings is statistically less in the control groups than in the test groups, the suspicion may be raised of a causal connection to the substance under investigation.

Consider, for example, the situation in an experiment where bladder calculi are found in certain groups of rats as shown in the following table.

Per cent of Test Substance in Diet	Number of Rats per Group	Number of Rats Showing Calculi
0 (Controls)	24	0
2	24	0
5	24	1
10	24	0
25	24	3

Despite the fact that bladder stones occasionally occur in normal rats, none were reported in this particular control group, and while one case was observed at the 5 per cent test level none was found at 10 per cent. In the face of the fact that the 25 per cent dose level caused excessive water loss via the intestinal tract and probable concentration of urine (although no observations were reported on the latter point), can it be deduced from these data that the calculi were caused by toxicity of the test substance? What are the probabilities?

This is cited as an example of a situation where scientific judgment must supplement factual observation and statistical analysis; and it is in this area that differences in interpretation exist. Here are exemplified the need for large groups of animals and a better knowledge of the nature and cause of pathology incidental to aging of animals on presumably adequate rations.

This brings up another problem which confronts the toxicologist concerned with food additives. Shall the basal ration be a commercial stock diet of unknown, uncertain, or inconstant composition, but low in cost and probably nutritionally adequate; or shall it be composed of purified ingredients such as casein, starch, salts, and vita-

mins of quite definite and reproducible composition and, though nutritionally complete, quite unlike the foods that comprise human diets; or shall it be patterned after the diet of the human population, or any segment thereof, which will ultimately constitute the medium in which the food additive will be consumed. I believe a good case can be made for the last-mentioned alternative.

What about the food consumption patterns of the economically depressed, of diabetics, of hypertensives, of various national groups, of the aged, of dietary faddists, etc? Some general understanding is needed as to where the responsibility of the food industry toward consumers generally ends, and where the responsibility of the individual and of the medical profession begins. Other aspects of this many-faceted problem are the selection of appropriate dosage levels, size of groups, the manner of feeding, housing and sanitary maintenance, the kind of observations to be made (e.g. reproduction and lactation, pharmacodynamic or biochemical tests, etc.), the recording, assembling, and statistical evaluation of data, and the need to determine whether and when the findings justify termination of these expensive studies.

These aspects of the subject cannot be dismissed without calling attention to the situation engendered by the expression "poisonous or deleterious substances." When this term is interpreted in the light of possible injury to public health, the test levels of substances under investigation can be arrived at from consideration of the amounts intended to be used, making due allowance for margins of safety. But when interpreted in an absolute sense, i.e., without relation to conditions of use, according to the administrative conception of the tolerance section of the Food, Drug and Cosmetic Act, the problem of suitable test dosage levels becomes more difficult and the solution may be quite arbitrary.

Finally the toxicologist has the major responsibility of expressing an opinion as to the potential hazard, if any, resulting from the proposed use of the chemical additive. Thus, his limited experimental observations on toxicity to animals must eventually be translated into terms of risk to man. Whether such risks are more than balanced by the potential benefits to health, dietary variety, world food supplies, esthetics, economy, and other factors involving social and cultural, as well as nutritional, considerations, are questions not strictly within the orbit of toxicology. These are questions to which eventually the public must supply the answer.

San Diego Discontinues Fluoridation

At the state primary election in June the citizens of San Diego by a slight majority voted to discontinue supplementing the fluorides in the city water supply to equal one part of fluoride per 1,000,000 parts of water. The natural fluoride content of the water is 0.3 parts of fluoride per 1,000,000 parts of water. The fluoridation program was initiated in November, 1952, by the city administration. Thus the population enjoying fluoridated water has been reduced by about 350,000.

Viewpoints on the Problems of Chemicals in Foods

The Nutritional Point of View: What Is Expected of Foods?

WILLIAM J. DARBY, M.D., Ph.D., F.A.P.H.A.

Food was defined by Graham Lusk [1] as a palatable mixture of foodstuffs. Foodstuffs, in turn, are the materials capable of being added to the body substance or which will prevent or reduce the wasting of a necessary constituent of the organism. A wide variation exists in the mixtures of foodstuffs considered to be palatable. Furthermore, foods today often contain materials which cannot be classed as foodstuffs—the so-called "additives," substances introduced into the food, either by intent or accident.

Additives, intentional or incidental, may be totally utilizable as foodstuffs, partly utilizable as foodstuffs, or may have no nutritive value whatsoever. Some additives, although devoid of nutritional value, may protect nutrients present in our foods; some may alter nutrients; and some may possess inherent toxicological properties. Certain additives may be inert; others may be used to replace nutrients commonly associated with foods. The nutritionist has a just interest in and a responsibility concerning all of these possibilities. This becomes more evident when we consider specific examples:

The addition of iodine (as iodide or iodate) to salt or of vitamin A to margarine purposefully enhances the nutritive value of the food. When ascorbic acid is added in the processing of frozen fruits this likewise adds directly, although not intentionally, to the nutritive value of the product.

Artificial, non-nutritive coloring agents are obvious examples of additives that are not foodstuffs. The use of these agents to improve acceptability is widespread. If employed in combination with certain artificial flavoring agents, they may possibly allow the omission of ingredients which are expected to be incorporated in a product, such as jelly, and thereby permit a reduction in content of certain desirable foodstuffs.

Non-nutritive, artificial sweeteners exemplify an additive, the use of which results in a reduction in the food value (calories) normally associated with a particular food, such as canned fruits. The possibility of such a reduction is of concern to the nutritionist who will immediately ask such questions as: What nutritional benefits or detriments will result? For whom is the product intended? Who else will consume it? Are these effects desirable in those who will consume the product? (Note that those who may consume a product are not always those for whom a product is initially intended.) How will the total nutrient supply be altered? What will be the effect upon the cost to the consumer of obtaining an adequate diet? What is the extent of toxicological hazard in the use of the additive?

With such questions in mind it may be well to examine the definition of a wholesome food [2] as offered by the Council on Foods and Nutrition of the American Medical Association:

"A wholesome food is a product which

makes a significant contribution to the human dietary requirements and which is clean and free from microorganisms and chemical additives of such quality or in such quantity that may be directly injurious or result in reduced nutritional quality."

I suspect that few would quarrel with this definition, although there might be considerable difference of interpretation of the meaning of the phrase "free from . . . chemical additives of such quality or in such quantity that they may be directly injurious or result in reduced nutritional quality."

The requirement "free from chemical additives of such quality or in such quantity that they may be directly injurious" might be interpreted by some as meaning simply that food contains no additive which results in rather immediate apparent injury to the individual after consuming the food. Most of the cases in which food additives have been recognized as harmful to man are of this variety. That is, the evidence of toxicity occurs sufficiently close upon the ingestion of the foodstuff so that it is possible to establish an obvious relationship. In many instances such relationships have been established in experimental animals but have not been demonstrated for man. In the case of certain additives, such as agene or coumarin, the substance in question has been removed from human foods on the premise that it might be harmful for man since it is harmful for animals.

One cannot, however, restrict the consideration of toxicity of additives to a brief time span. Food is consumed daily and substances contained in food may exert an effect more chronic in character.

Indeed, considerations of the possible toxicity for man of food additives have introduced the toxicologists to a new level of thinking. Certain additives have a potentially wide spectrum of use in foodstuffs—so wide that they may enter one or more items which are habitual parts of the daily diet of every individual throughout life. Obviously, in such cases the possibility of long-term chronic toxicity related to all ages must be considered. Where consumption by the total population will occur, the composition of that total population must be considered. At any instant a rather sizable portion of our population is burdened with temporary or chronic illness, recognized or unrecognized. A segment of the population is undergoing various physiological changes or stresses, such as pregnancy. Some of these conditions might render a population segment peculiarly susceptible to the particular food additive. This possibility must be considered in evaluation of the suitability of the substance for use.

It is apparent, therefore, that the considerations in relation to non-nutritive additives in foods are different than the considerations which determine whether or not a particular therapeutic agent will be permitted for use in treating sick patients. In a report of the Food Protection Committee [3] concerning "The Safety of Polyoxyethylene Stearates for Use as Intentional Food Additives," this thought was expressed in the following words:

> Were the additive in question a therapeutic agent, the appraisal of toxicologic data might be essentially a decision between two threats to health, viz., a hazard of the untreated disease and the risk involved in treatment. As the necessity or justification for use becomes less apparent, the margin of safety demanded must be increased proportionately until, at the point where there are no benefits to the consumer directly referable to the maintenance of or restoration of health, the justifiable risk approaches zero. Then the exercise of con-

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Dr. Darby is professor of biochemistry and director, Division of Nutrition, Vanderbilt University School of Medicine, Nashville, Tenn.

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servative judgment requires the demonstration of safety beyond any reasonable doubt.

From the nutritional standpoint, I would give this answer to the query "What is expected of foods?" Foods should be wholesome within the meaning of the definition which the Council on Foods and Nutrition of the American Medical Association has provided; they should contain at least those nutrients that are traditionally expected to be contributed by the particular food; and they must be available to the consumer and at a price and in a manner such that it is not prohibitive for the public to be well nourished.

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2. Council on Foods and Nutrition, American Medical Association. Definition adopted November 30, 1950.
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Evaluation Phase of Polio Vaccine Trial Needs Physicians' Aid

In the field test of the trial polio vaccine, being carried on by the National Foundation for Infantile Paralysis, more than 600,000 children have completed three inoculations. The emphasis has now shifted to the evaluation study. This phase of the study depends, to a large degree, on the wholehearted cooperation of practicing physicians. The validity of the evaluation is dependent upon data gathered on poliomyelitis cases in the test groups, including those children in the first three grades who did not get vaccine. In addition, data on cases among family members of participating children are an integral part of the study. Since the number of poliomyelitis cases among the test groups may not be large, it is essential that all cases be completely reported. Early diagnosis, prompt reporting and follow-up, and the securing of necessary epidemiological information and laboratory specimens are vital factors in the evaluation.

An outline of procedures and copies of necessary forms for reports of physicians have been sent to local and state health authorities. It is important that physicians in areas where vaccinations were not given cooperate in the study by notifying local or state health officers of cases occurring among children who participated in the trials and then migrated to another area and among those who go to summer camps. Local health officials also need information on participating children who receive injections of Gamma Globulin.

The evaluation study is under the direction of Thomas Francis, Jr., M.D., University of Michigan School of Public Health. The vaccine used was developed by Jonas E. Salk, M.D., University of Pittsburgh.

Viewpoints on the Problems of Chemicals in Foods

The Viewpoint of a Food Manufacturer

ROY C. NEWTON, Ph.D.

The subject of chemicals in food has attracted much attention during the past few years. While this public attention is new, the problem itself is old to us in the food industries which are constantly striving to accomplish the following objectives: (1) lower cost of production, whether the food be of plant or animal origin; (2) retard the rate of deterioration from insects, bacteria, enzymes, and chemical change, such as oxidation; (3) lower the cost of processing; (4) improve the method of distribution; (5) improve convenience in use; (6) improve palatability with respect to odor, flavor, and texture; and (7) retain or improve nutritive quality.

Chemicals play an important role in all these objectives in so far as they have been accomplished in the past and offer great possibiilities for further progress in the future. The chemical manufacturing industry has supplied the food producer and processor with materials used in the past and sees clearly the opportunity for a greatly expanded business for the future. Thus arises intense interest from two different commercial angles.

The consumer, while not always organized to be intelligently articulate, has, of course, the greatest interest in this question, since it is his physiological system which must tolerate, metabolize, and eliminate the chemical introduced along with the food. This is no new problem to the consumer, since he has always been forced to select items of food which would be nutritive and yet harmless. This must have posed many a puzzle for ancient man as he slowly gained experience in the art of food selection. He must have made many unwise selections and suffered the consequences accordingly until there was accumulated a background of human experience to guide him. In other words, over a span of countless generations he learned to use the senses to select those food items which were good for him.

But what of today when the foods are processed beyond recognition of those items familiar even to our grandparents. It seems clear that these senses can no longer serve as the sole protection; so civilized man has set up proper instruments of society to fill the gap in this necessary safeguard. In the last few years the number of new chemical substances proposed for use in foods has increased by leaps and bounds. Where should we place the responsibility for proving the new substances harmless?

Within the federal government there are several regulatory bureaus. I would mention two, first, the Meat Inspection Division of the Bureau of Animal Industry and, second, the Food and Drug Administration.

The Meat Inspection Division has

Dr. Newton is vice-president in charge of scientific research, Swift and Company, Chicago, Ill.

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jurisdiction over all meat and meat food products shipped interstate; the law authorizes them to set up regulations governing the interstate shipment of these products and to provide inspection of product and processing plants necessary to see that these regulations are complied with. If a proposed process is not provided for in these regulations, one cannot operate the process in an inspected plant until the regulations are changed. This makes it very simple for this bureau to require proof that a new material is wholesome and edible before allowing its use in food under MID inspection.

With the revision of the law a dozen years ago, the Food and Drug Administration was authorized to promulgate standards and definitions of food products and to recognize and set limitations for certain optional ingredients which could not be avoided or were necessary for processing, etc. Once a standard and definition have been promulgated on a food product, it is unlawful to ship interstate any of this food containing substances not included in the standard. This would seem to provide adequate authority for full protection from the addition of any untested chemical substance appearing in such food.

The Food and Drug Administration has been busy holding hearings and setting such standards, but because of the immensity of the task and the interruption of the war, there are still many more foods outside the standards than within. In the case of unstandardized foods, the law provides authority for the Food and Drug Administration to seize any interstate shipment that contains poisonous or deleterious substances. This sounds good, but here is the problem. As the law now stands, the Food and Drug Administration must be able to prove that a substance is injurious to the human body before it can prevent the use of that substance in an unstandardized food. This cannot always be done short of a two- or three-year study. This, coupled with the fact that the number of chemicals proposed for use in food has increased greatly in recent years, makes it impossible for the FDA to protect the public on a practical basis under the present law. A simple change in the law that would require the person proposing the addition of such a new substance to prove that it is harmless would relieve the situation and would provide all the safeguard to public health that is needed.

Somehow, we must formulate a sound and complete national policy on a common-sense program for pretesting and reasonable certification of the harmlessness of any new substances proposed for use in foods. I am convinced that a satisfactory program can be worked out between the chemical industry, the food industry, and the Food and Drug Administration. Two years ago I made the statement: "It is time the various segments of the food industry announce in unequivocal terms the high standard of ethics which has in the past and will in the future be its guide. We must not remain silent while others give the wrong impression of our industry."

Since that time eight trade associations representing a very high proportion of the entire food industry have adopted resolutions setting forth these principles, as follows:

> We believe it is the responsibility of the Food Industries to exert every effort toward the production and distribution of foods which are wholesome and nutritious and to assure adequate safeguards against contamination or adulteration which would render human food unwholesome.
>
> We believe the Food Industries should continue to improve their food products from the standpoint of nutritive value, wholesomeness, palatability, and convenience, but in so doing public health and welfare should continue to be the first consideration.
>
> We believe every substance not represented by long usage in human diet should be subject to question as an ingredient in food, and

that this question should be resolved by adequate animal experimentation to prove that its use in food does not present a hazard to public health.

We believe every new substance proposed for use in human food should be subjected to adequate pretesting by the manufacturer or user of the substance and that such pretesting should be required by law.

We believe it to be a proper function of government to control those factors which may affect adversely public health. Therefore, we believe the results of animal experimentation in pretesting new substances proposed for use in food should be reviewed and approved by the Food and Drug Administration before the substance is allowed to be used in food sold to the public.

We believe the Food, Drug and Cosmetic Act of 1938, as amended to date, does not provide adequate authority for the Food and Drug Administration to control the addition of unusual substances to those foods on which Standards and Definitions have not yet been promulgated, and that the law should be modified properly in this respect.

A New PHS Leukemia Studies Section

A Leukemia Studies Section has been established at the Public Health Service's National Cancer Institute. The section is responsible for formulating and executing the program of the National Cancer Institute in experimental leukemia, including investigations directed toward improving the treatment of clinical leukemia and elucidating the etiology and pathogenesis of leukemia in experimental animals.

The new section is headed by Dr. Lloyd W. Law, a Public Health Service officer who has been studying factors affecting the development of leukemia in laboratory animals since he joined the National Cancer Institute in 1947. Among his contributions to this field are: (1) the demonstration that the thymus plays a distinct and specific role in the induction in mice of acute lymphocytic leukemia, the type most frequent in children; and (2) a description of the mechanism and control of drug-resistance of leukemic cells in the experimental animal.

Viewpoints on the Problems of Chemicals in Foods

The Views of the Food and Drug Administration: Regulation of Food Additives

CHARLES A. HERRMANN

The term "regulation of food additives" may connote to some the use or threat of force or sanction, or the waving of the big stick over hapless food manufacturers. To hear some others tell it, regulation by the Food and Drug Administration is a necessary cross that must be carried by the food manufacturer, a dragging anchor that slows down technological progress in the production, handling, and marketing of food products.

Actually, we consider our role in this field, the reconciliating of the equities of the food producer and handler with the interests of all of us as food consumers.

Let us briefly review the status of chemical additives to foods under the present Federal Food, Drug, and Cosmetic Act. The presence in any quantity of a poisonous or deleterious substance which may render a food injurious to health now constitutes adulteration. The law makes a distinction between substances that may be present naturally and substances that may be added. In the case of a natural substance of poisonous or deleterious character, the law considers the food containing it as adulterated only if the quantity of the poisonous substance in the food ordinarily renders it injurious to health. This is to avoid banning such foods as coffee, the caffein content of which may cause serious reactions in sensitive persons. In the case of poisonous or deleterious substances that are added, the presence of any amount is prohibited unless the added substance is required in the production of the food or cannot be avoided by good manufacturing practice. The secretary of the Department of Health, Education and Welfare is authorized to promulgate tolerances limiting the amounts of deleterious substance to the extent necessary for the protection of public health.

When we consider the testimony in the 1950 hearings before the House Select Committee to Investigate the Use of Chemicals in Food Products (pp. 362, 364–365) that there are approximately 30 basic manufacturers of agricultural chemicals in this country, plus about 400 reprocessors and mixers, and that the State of California which requires registration of such agricultural chemicals has "about 22,000 products registered since the end of the last war," it becomes clear that safeguarding the consumer by setting and trying to enforce tolerances is a major problem. Even if we accept the statement at the hearing that these 22,000 brand names can be reduced to approximately 125 basic chemicals, the research work necessary to fix legal tolerances within the limits of safety of that number of items is many times beyond the capabilities of the personnel, facilities, and appropriations of the Food and Drug Administra-

tion, because it would have to include endless combinations involving countless synergistic relationships, and cover all possible diverse uses that would affect the cumulative total of poison reaching the consumer. Besides these agricultural chemicals there must be considered the antioxidants, the stabilizers, the plastisizers, the preservatives, the softeners, the emulsifiers, and a host of other types of "improvers" that are constantly being developed and exploited for use in foods. At the present time there is no legal compulsion that these new additives be tested for safety before being introduced. There is no law against using the consumer as a human guinea pig. The Select Committee investigations already referred to brought out testimony nearly three years ago that there were some 704 chemicals thought to be in use in food at that time, of which 428 were "probably" safe, as normally used.

What remedial steps can be taken in these circumstances? In passing the Federal Food, Drug, and Cosmetic Act of 1938 the Congress included a new drug section, but not a comparable provision for new foods. Under the new drug section of the act the introduction of any new drug not generally recognized among scientific experts as safe for use under the conditions prescribed or suggested is prohibited unless a new drug application covering it is effective. In order to file a new drug application, full reports of investigations as to safety, full list of components and statement of composition, together with a full description of methods used in manufacture, processing and packing, as well as detailed recommendations for dosages, intended use, contraindications and warnings, where required, must be given. Since 1938 some 9,000 new drug applications have been submitted and 6,400 effective applications have been issued. All of them except one were settled without legal controversy.

The Food and Drug Administration is on record as favoring some sort of procedure similar to the new drug provisions to cover new chemical additives to foods. Such new legislation should rest on the sound fundamental principle, adequately demonstrated by experience in the drug field, of letting scientific questions be settled by scientific people. Such a procedure should contemplate first of all the placing upon the manufacturer or developer of the new item the primary responsibility of investigating its safety before it is admitted as an ingredient of food. It is of the utmost importance in the public interest that poisonous substances be not added to our food supply, even in nontoxic amounts, unless they are really necessary to the production of the food or cannot be avoided by good practice. Even then the amount should be held to a minimum and in no event should the quantity reach a level that may be injurious when the food is consumed alone or with other foods which may contribute to a cumulative intake of poisonous substances.

Investigations which would constitute a minimum in judging the safety of a new chemical additive must, to be of value, cover at least the following basic points:

1. Establishment of the chemical identity and analytical methods of detection, identification, and quantitative estimation of the proposed chemical additive.

2. Investigation of acute toxicity in test animals which should not be limited to rodent species, but should include also one or more nonrodent species.

3. Study of subacute and chronic toxicity effects, including not only growth, mortality,

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Mr. Herrmann is chief, New York District, Food and Drug Administration, U. S. Department of Health, Education and Welfare, New York, N. Y.

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and reproduction patterns, but also blood level studies, metabolic fate of the compound, examination of organs and tissues, and similar criteria.

It has been held that absolute safety of any food additive for all people under all circumstances cannot be guaranteed. The point is well taken, but is no more serious than with new drugs. If a new food additive is tested by all methods reasonably applicable and no adverse results are obtained, it should be cleared for use. However, its use should be watched. If experience shows that it may be harmful, it should be reinvestigated, reappraised, and if the facts warrant, its clearance for use in foods should be cancelled. The new drug section of the present law wisely sanctions this course of action.

Some interested groups have insisted upon the need for scientific advisory committees to deal with food additives. The Food and Drug Administration is not opposed to such committees. In fact, in some of our most difficult problems we have turned to such groups, as, for example, the National Research Council. We believe, however, that an independent scientific group would be better than a scientific arbitration committee, as has been proposed.

Medical Career Planning by Army

A special committee on Army medical education under the direction of the National Research Council's Division of Medical Sciences has been assigned to inventory Army medical services and medical personnel policies with emphasis on the problems of medical career planning. The committee is also to seek improvements in civilian medical education needed to better prepare physicians for their role in national defense both in Army and civilian life. Dean A. Clark, M.D., director, Massachusetts General Hospital, and chairman, Subcommittee on Medical Care, American Public Health Association, is chairman; Thomas Bradley, M.D. is executive secretary. Other members are Drs. Gaylord M. Anderson, Joseph Hayman, Jr., Franklin C. McLean, John H. Mulholland, I. S. Ravdin, and Grant Taylor.

Viewpoints on the Problems of Chemicals in Foods

Chemicals in Foods: A Legal Viewpoint

VINCENT A. KLEINFELD

The increasing employment of food additives has caused a growing apprehension that the Federal Food, Drug, and Cosmetic Act does not adequately protect the consumer who is necessarily an amateur with respect to both the foods and drugs which he purchases. The statute requires that, before a new drug is marketed, evidence as to its safety must first be submitted to the Food and Drug Administration. The burden is on the manufacturer to demonstrate the freedom of the drug from hazard when used as directed. However, the law does not make a similar requirement with respect to substances employed in food products. Additives whose safety is not firmly established may be excluded from foods which are standardized by the Food and Drug Administration, and this exclusionary power has been sustained by the courts. However, the establishment of standards is frequently a laborious and expensive process and most foods are not, and may never be, standardized. Consequently, a substance whose safety has not been demonstrated may be utilized in many foods because the government, although suspicious of the possible long-range adverse effects of the additive, cannot prove to the satisfaction of a court and jury that it may be poisonous or deleterious.

The problem is highlighted by the polyoxyethylene stearate emulsifiers which were employed in many food products, including bread. After extremely protracted hearings the Food and Drug Administration refused to permit the use of these "softeners" in bread and this decision was ultimately sustained by the courts. Recently, the Food Protection Committee of the National Research Council's Food and Nutrition Board issued a report that available data "fail to demonstrate" that these substances are safe for use in foods "under all patterns of dietary consumption and for all segments of the population."

Yet, these emulsifiers were used in a variety of foods for a considerable period of time. A recent editorial in a publication devoted to food technology criticized the report of the Food Protection Committee on the surprising ground that the committee had "leaned a bit backward in the interest of safety." Is it asking too much of the manufacturer of a substance to be used in a wide variety of foods to submit evidence that the product does not present a hazard? If this is not done, there is little doubt that in time the government will create an additional control, an amendment to the Federal Food, Drug,

Mr. Kleinfeld is an attorney specializing in food and drug matters, Washington, D. C.

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and Cosmetic Act requiring the pretesting of chemicals proposed for use in or on foods.

H.R. 2245, the food-additives bill, which has been introduced by the former chairman of the Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics, defines a chemical additive as a substance intended for use in or on food which is not generally recognized by experts as having been adequately tested to show that it is not poisonous or deleterious, or if it is poisonous or deleterious, it is not generally recognized as having been adequately tested to show that it is safe. The bill provides that no person shall introduce into interstate commerce any chemical additive, as so defined, unless its use has been approved by the Secretary of Health, Education, and Welfare. A person desiring to obtain approval of a chemical additive must submit to the secretary reports of investigations which have been made to determine the toxicity and other potentiality for harm of the substance; a statement of its composition; and a description of methods of analysis for its quantitative determination in or on food. If the substance is poisonous or deleterious, a statement must be submitted showing that it is required in the production of food, together with reports of investigations which have been made to show the quantities remaining in or on the food and a description of adequate methods of removal of excessive quantities.

Unless the secretary issues a notice of hearing, a request for approval is deemed to be approved on the 60th day after it has been filed, although the date on which the request shall be deemed to have been approved may be postponed for a period of not more than 180 days after the filing of the request. The bill provides further that, unless the request is approved automatically by the expiration of these time periods, the applicant must be given an opportunity for a hearing. Decisions of the secretary are to be made only after a review of the whole record, and in accordance with the reliable, probative, and substantial evidence. In any such order the secretary must make detailed findings of the facts on which he based his order. These orders are specifically made subject to judicial review in accordance with the provisions of Section 701(f) of the Federal Food, Drug, and Cosmetic Act. There appears to be a distrust by many in the affected industries of the administrative process. They are not satisfied with the type of review now specified in the Federal Food, Drug, and Cosmetic Act. Thus, a bill sponsored by another member of the Select Committee to Investigate the Use of Chemicals in Foods and Cosmetics provides for a submission of the administrative record to the U. S. District Court for the District of Columbia and for a proceeding which amounts to a complete judicial trial. The bill provides that "No presumptive force or effect shall be given to the validity of the order complained of."

A problem arises with respect to the constitutional validity of such a provision. Aside from this, however, the practical question arises as to the purpose of holding an expensive and time-consuming hearing before an administrative body. If the process is to be repeated before a court, why bother at all with the administrative hearing? A tenable argument can be advanced for doing away completely with any proceedings before an agency which is part of the executive branch of the government. Under existing law, the Food and Drug Administration must prove to the satisfaction of a court and jury, by a preponderance of evidence in a civil case, and beyond a reasonable doubt in a criminal case, that a food contains a poisonous or deleterious substance. If a court and jury are qualified to determine such questions, it may be argued that they are in a position to decide

whether a chemical proposed for use in a food may cause injury when consumed over a life span.

I do not believe, however, that it makes sense to do away with the knowledge and experience of the Food and Drug Administration. Somewhere along the line there must be an umpire, and it seems to me that that agency is far more qualified than are a court and jury to act in that capacity. It is not a recent innovation of Congress that many of the problems of our highly complicated economic system should be entrusted to specialized agencies. This was predicated upon the belief that the courts could not possess the knowledge and skills which can be brought to bear upon a problem in a specialized field by an agency established and staffed for that specific purpose.

The drafting of a bill which will satisfy the affected industries, the various consumers' groups, and the interested governmental establishments is a Herculean, but not insuperable, task. The endeavor is not facilitated by the piling of Ossa upon Pelion by means of the insertion in proposed legislation of qualifying adverbs and adjectives; the creation of various committees or other tribunals to stand as arbitrators between the executive branch of the government and industry; the establishment of unreasonable periods of time within which governmental action must be taken; and the formulation of innovations in the field of administrative law, particularly where the public health is involved. Certainly, there is room for compromise —for give and take. But it is imperative, in my opinion, from the viewpoints of both industry and the public, that a solution be reached and an umpire chosen before some incident with serious consequences occurs.

International Lasker Awards

The first of a series of three triennial awards will be presented by the Albert and Mary Lasker Foundation at the Sixth World Congress of the International Society for Cripples at The Hague, Netherlands, on September 15. The purpose of the awards, each consisting of $500 and a silver statuette of the Winged Victory of Samothrace, is to emphasize the importance of developing improved services for the disabled of the world. Either individuals or groups may receive recognition through the awards. An international committee of experts is selecting the three winners from nominees proposed by the society's affiliated national organizations and by other organizations carrying out programs for the disabled. This represents the sixth scientific field in which the Lasker Foundation is giving the awards.

Studies in Human Subjects on Active Immunization Against Poliomyelitis

II. A Practical Means for Inducing and Maintaining Antibody Formation

JONAS E. SALK, M.D., F.A.P.H.A.; with the collaboration of: P. L. BAZELEY, M.D.; MAJOR BYRON L. BENNETT (Ret.); ULRICH KRECH, M.D.; L. JAMES LEWIS, Ph.D.; ELSIE N. WARD; and J. S. YOUNGNER, Sc.D.

Here is definitive evidence of the basis upon which a vaccine for poliomyelitis is being tested.

For almost two years we have been attempting to devise a practical means for immunizing man against paralytic poliomyelitis. As a guide for evaluating the approaches which have been employed, the assumption has been made that a method which will cause antibody to be present in the blood stream, in amounts comparable to that resulting from natural infection, might be expected to prevent the paralytic disease. A further assumption has been made that a method that will alter immunologic reactivity in a way that is similar to the alteration resulting from natural infection—that is to say, will cause the development of a state of heightened responsiveness to further inoculation (i.e., the "recall" reaction or the "booster" response) might be expected to provide long-term immunity. If these effects could be achieved with a noninfectious virus vaccine, further support would be provided for the hypothesis that it may be possible to simulate the immunizing effect of infection with chemically treated virus.[1]

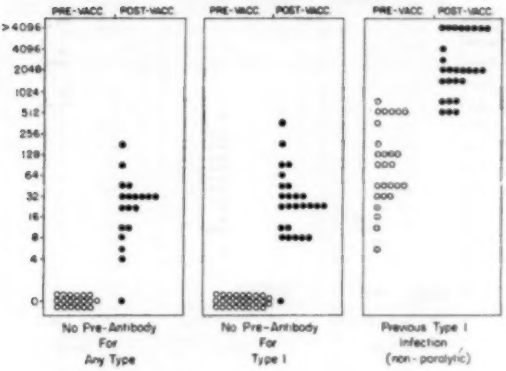
The purpose of this report is to present the results of studies in human subjects, indicating the following: (1) By the proper use of a suitably prepared noninfectious vaccine, formation of antibody can be induced; and, in many instances, concentration of antibody in the serum can be raised to levels corresponding to those found in persons who have had a naturally acquired infection. (2) Primary immunization appears to sensitize the immunologic mechanism in a manner similar to that observed in persons who have had a natural infection.

Results

Primary Response to Vaccination in Persons with and without Prior Immunologic Experience with the Poliomyelitis Viruses—The data summarized in Figures 1, 2, and 3 contain a compilation of results of serologic studies in persons first inoculated in May, 1953. Some were inoculated with aqueous vaccines and others with adjuvant vaccines; still others with combinations of the two. Some received one inoculation, others received two, and still others received three. When two doses were administered they were given two weeks apart; the three doses were at intervals of one week. The antibody levels shown are those determined before and after three or six weeks following the first injection. In these charts no distinction

Figure 1

TYPE I. POLIOMYELITIS ANTIBODY RESPONSE IN VACCINATED HUMAN SUBJECTS.



is made between those who received either one, two, or three injections; nor is any distinction made between those who received the aqueous or emulsified vaccines, or the combination of the two. These differences will be emphasized in another report on the relative efficiency and effectiveness of the different types of vaccines and different schedules of vaccination. As in so many other aspects of these continuing studies, large numbers of persons have been inoculated and numerous blood samples have been obtained; but not all have been tested. Rather, a sufficient number has been examined to indicate the trend and to answer an important question that would make possible the performance of another experiment. Even before the results are had from tests of all serum specimens the indication of the outcome is usually evident from an examination of suitably selected samples.

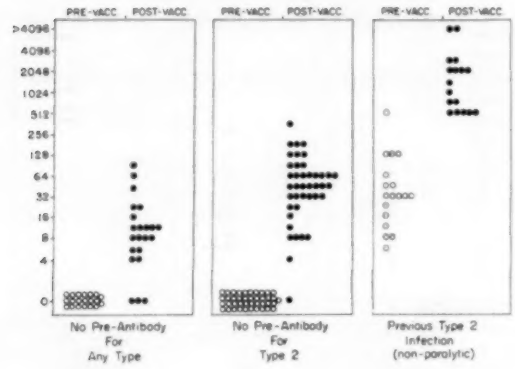
The principal purpose of the summaries in Figures 1, 2, and 3 is to illustrate the difference in immunologic responsiveness of individuals with and without prior immunologic experience with viruses of each of the three types. Another purpose is to illustrate the response of persons who before vaccination had no demonstrable antibody for any of the three virus types, compared with those who had no demonstrable antibody for only one or two types. In the left-hand frame of each chart (Figures 1, 2, and 3) is shown the levels of antibody induced in persons (mostly children) who had no detectable prevaccination antibody for any of the three virus types. In the middle frame is shown the levels of antibody induced for those types for which no antibody was detectable for the respective type in persons who had antibody for one or both of the other two types. In the right-hand frame is shown the distribution of antibody titers before and after vaccination for those types for

The authors are associated with the Virus Research Laboratory, Department of Bacteriology, School of Medicine, University of Pittsburgh, Pittsburgh, Pa.

These studies were aided by a grant from the National Foundation for Infantile Paralysis, and were presented in part before the New Orleans Graduate Medical Assembly, on March 11, 1954. Because of its length this paper could not have been published without the assistance of the NFIP.

Figure 2

TYPE 2. POLIOMYELITIS ANTIBODY RESPONSE
IN VACCINATED HUMAN SUBJECTS.



which prevaccination antibody was present.

The indications are clear from these charts (Figures 1, 2, and 3) that persons with some antibody, acquired as a result of previous natural infection, respond much more strikingly than do those who have had no prior immunologic experience with the respective virus types. There is some indication in Figure 2 that the presence of antibody to one or more of the other types facilitates slightly the response to the type for which no antibody is present before vaccination. However, the difference between this effect, illustrated by comparing the first and second frame of each figure (in Figures 1, 2, and 3) and the effect illustrated in the third frame is very striking indeed.

Figure 3

TYPE 3. POLIOMYELITIS ANTIBODY RESPONSE
IN VACCINATED HUMAN SUBJECTS.

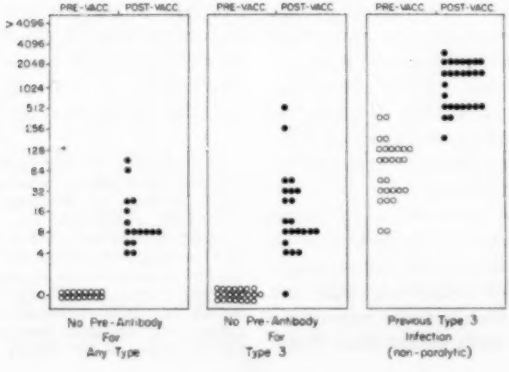


Table 1—Antibody Persistence Over Seven Months and Response to Booster Injection at that Time in Persons with No Prevaccination Antibody to Respective Types

Subject No.	Age	TYPE 1 Pre-Vacc.	TYPE 1 7 Mos.*	TYPE 1 12 Days Later	TYPE 2 Pre-Vacc.	TYPE 2 7 Mos.*	TYPE 2 12 Days Later	TYPE 3 Pre-Vacc.	TYPE 3 7 Mos.*	TYPE 3 12 Days Later
F-77	7	0	4	512	0	4	128	0	8	512
F-80	6	0	4	512+	0	0	256	0	4	512+
F-336	12	0	16	1,024	0	16	256	0	16	512
F-79	10	0	4	128	0	4	256	0	4	128
F-328	10	0	64	4,096+	0	4	256	0	4	256
F-332	3	0	8	256	0	128	1,024	0	0	512
F-4	6	0	64	1,024	0	4	1,024	0	4	512
F-47	10	0	16	1,024	0	4	256	0	8	1,024
F-2	9	0	32	512	0	8	128	0	4	256
F-45	9	0	32	4,096+	0	32	512	0	16	1,024
F-335	11	0	32	2,048	0	0	128	0	8	1,024
F-175	7	0	4	1,024	0	8	512			
F-176	9	0	4	64	0	16	256			
F-55	9	0	8	1,024+	0	8	1,024+			
F-56	5	0	4	1,024+	0	0	512			
F-76	9	0	16	512	0	4	128			
F-30	13	0	16	256	0	8	128			
F-31	4	0	8	512+	0	32	1,024			
F-52	7	0	16	1,024	0	4	512			
F-54	5	0	32	512	0	8	256			
F-53	12	0	32	2,048	0	64	128			
F-142	33	0	64	256				0	8	128
F-307	4	0	128	2,048				0	16	4,096+
F-308	4	0	32	512				0	0	32
F-330	3	0	128+	1,024+				0	8	2,048+
F-84	17	0	32	2,048				0	4	1,024
F-162	14				0	32	1,024	0	8	128
F-226	A †				0	32	512	0	16	32
F-337	8				0	16	128	0	16	2,048
F-74	15				0	32	1,024	0	8	64
F-85	12				0	32	256	0	16	1,024
F-104	13	0	32	1,024						
F-72	4	0	16	256						
F-318	A	0	64	256						
F-83	A				0	16	64			
F-1	18				0	16	1,024			
F-18	12				0	64	256			
W-48	A				0	8	256			
F-78	11							0	16	128
F-6	16							0	64	512
F-14	A							0	32	1,024+

* = Time of booster injection.
† A = Adult.

Degree of Persistence of Vaccine-Induced Antibody during an Observation Period of Seven Months and Response to a Booster Injection—When these data became available the question that arose immediately was whether or not those who had no demonstrable antibody prior to vaccination in May, 1953, would react upon reinoculation, with antibody formation, in the manner observed in those who had a natural infection prior to the injection given in May, 1953. Accordingly, on December 28, 1953, a group of 163 persons was reinoculated. In addition a new group of 26 was vaccinated for the first time.

Figure 4

GEOMETRIC MEAN ANTIBODY TITERS BEFORE AND AT INTERVALS UP TO SEVEN MONTHS AFTER PRIMARY VACCINATION AND AFTER A "BOOSTER" INJECTION. (COMPOSITE OF DATA FOR TYPES 1,2 & 3)

First vaccination - 1 ml., i.m. - aqueous vaccine no. 11-A, three doses-one week apart.
"Booster" - single injection 1 ml., i.m. - aqueous vaccines no. 18 or 19.

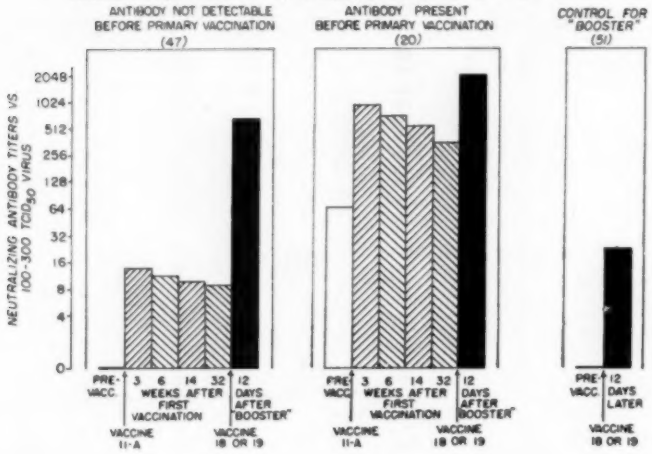


Figure 5

COMPOSITE CHART FOR TYPES 1,2 & 3 POLIOMYELITIS ANTIBODY BEFORE AND AFTER A "BOOSTER" INJECTION GIVEN 7 MONTHS AFTER PRIMARY VACCINATION.

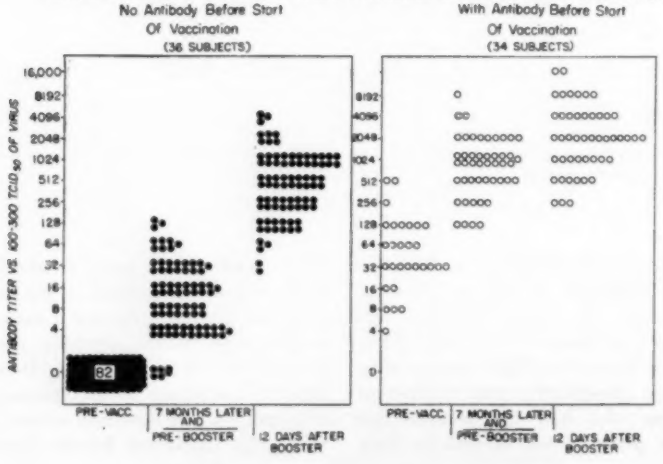


Table 2—Antibody Persistence Over Seven Months and Response to Booster Injection at that Time in Persons with Prevaccination Antibody for the Indicated Types

Subject No.	Age	TYPE 1			TYPE 2			TYPE 3		
		Pre-Vacc.	7 Mos.*	12 Days Later	Pre-Vacc.	7 Mos.*	12 Days Later	Pre-Vacc.	7 Mos.*	12 Days Later
F-306	A	4	128	256	128	2,048	2,048	45	2,048	2,048
F-39	A	+	1,024	1,024	+	512	512	+	256	256
F-78	11	+	512	512	+	1,024	1,024			
F-6	16	90	512	2,048	128	1,024	1,024			
F-14	A	11	1,024	2,048	22	1,024	4,096			
F-83	A	+	128	512				+	1,024	1,024
W-48	A	+	2,048	4,096				+	2,048	4,096
F-104	13				8	128	512	8	1,024	1,024
F-103	15				45	1,024	1,024	128	2,048	2,048
F-72	4				32	128	512	128	256	256
F-318	A				90	512	512	32	1,024	1,024
F-162	14	+	512	4,096						
F-85	12	+	1,024	2,048						
F-74	15	700	2,048	16,000+						
F-1	18	32	1,024	2,048						
F-18	12	128	8,192	8,192						
F-21	A	358	1,024	4,096						
F-337	8	512	2,048	8,192+						
F-142	A				+	2,048	8,192			
F-84	17				32	512	16,000+			
F-307	4				+	1,024	8,192+			
F-308	5				+	256	2,048			
F-330	3				+	512+	2,048+			
F-175	7							+	1,024	4,096
F-176	9							+	512	2,048
F-55	9							32	1,024	8,192
F-56	5							32	256	4,096
F-76	9							90	1,024	2,048
F-30	13							45	2,048	2,048
F-31	4							512	1,024	4,096
F-52	7							90	256	1,024
F-54	5							90	512	1,024
F-53	12							128	4,096	8,192+

* = Time of booster injection.
+ = Presence of antibody at 1:4 dilution (not titrated).

The latter group was to serve as a control since the preparation of vaccine used was different from that employed in May and it was necessary to compare the effect of a single injection in persons treated previously with that which occurred in those who had no prior treatment.

In this particular study, opportunity was had to observe not only response to reinoculation seven months after the primary immunization, but to observe as well the degree of persistence of antibody over the seven-month interval. The degree of persistence of antibody and the booster response will be illustrated in Tables 1 and 2, and in the accompanying Figures 4 and 5.

The data contained in Table 1 indicate the titers of antibody seven months after vaccination in persons who had no demonstrable antibody before vaccination either for all three virus types or who had no demonstrable antibody for one or two types. It is clearly evident from these data that, in a majority of instances, antibody was still detectable seven months after vaccination; and,

that 12 days after a single booster dose, consisting of 1 ml. of aqueous vaccine No. 18 or No. 19, titer of antibody increased substantially. These vaccines had been prepared by treatment with 1:4,000 formalin at 36° C.[3] Before presenting the control data for persons inoculated for the first time with vaccine No. 18 or No. 19, attention is drawn to Table 2 which contains information on subjects who had antibody, for the respective types, from a previous natural infection. The purpose of this table is to show the high degree of persistence of antibody, resulting from the initial course of vaccination, in persons previously infected naturally and in whom the primary vaccination was, in effect, a booster treatment.

A summary of these data, in which information is included only for those who received the aqueous material intramuscularly in 1 ml. doses, is shown in Figure 4. Here may be seen the geometric mean antibody titer in those who had no detectable antibody before vaccination and in whom, three weeks after vaccination, antibody level was at its maximum; a gradual decline was evident when calculations were made of the geometric mean of antibody titers at 6, 14, and 32 weeks after vaccination. One can also see the sharp rise in antibody level that occurred within 12 days after the booster injection. In the middle frame of Figure 4 is shown the geometric mean antibody level before vaccination for those types for which antibody was present as a result of a previous natural infection and how antibody rose sharply within three weeks after start of immunization, and then declined gradually, only to be reinforced at the time of the booster injection. It is clear from these data that, following the "booster," in those who had no detectable antibody before vaccination, the geometric mean antibody level was considerably higher than in normal or unvaccinated persons who had experienced a previous natural infection at some indeterminate time in the past.

The two-step relationship showing the primary and the booster response is illustrated more clearly in Figure 5. In this composite chart is shown the distribution of antibody titers before the start of vaccination, and the levels at the seven-month period; this chart contains the data for subjects included in Tables 1 and 2, and a few additional ones. Here one can see quite clearly that the levels of antibody remaining seven months after primary immunization, with vaccines and dosage schedules employed in this experiment, involving persons with no immunologic evidence of natural exposure, is somewhat lower than in those who had had a prior nonparalytic infection. Nevertheless, when the second stage was effected, which represented the booster response, both groups appeared to be comparable. The difference between the two groups, evident at the time of the primary immunization stage, was obliterated following the booster inoculation.

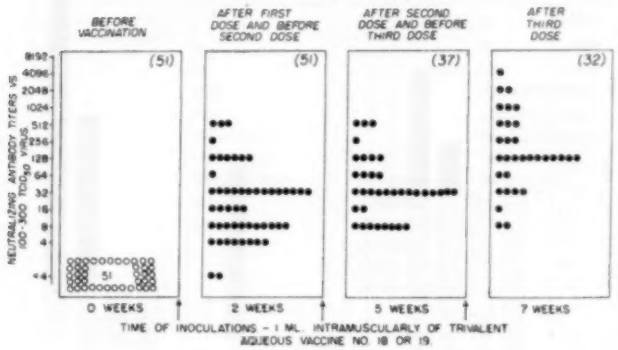
From the data shown in Table 2 and Figures 4 and 5, it appears that the level of antibody remaining seven months after vaccination, in persons who had had a previous natural exposure, was still well beyond that observed prior to inoculation. Furthermore, another injection at the seven-month point induced a limited rise in the majority.

Course of Antibody Development after Primary Immunization with Three Doses of Aqueous Vaccine—Other observations of interest are illustrated in Figures 6 and 7 which show the course of antibody development following three inoculations given with an interval of two weeks between the first and second, and three weeks between the second and third inoculation. The primary immunizing effect is that observed in persons who had no demonstrable antibody before vaccination (Figure 6) and the

Figure 6

COMPOSITE CHART FOR TYPES 1,2 & 3 POLIOMYELITIS ANTIBODY SHOWING RESPONSE TO VACCINATION IN 27 PERSONS WHO BEFORE VACCINATION HAD NO DETECTABLE ANTIBODY FOR THE RESPECTIVE TYPES.

Ten Had No Antibody To Any Of The Three Types And Seventeen Had Antibody To One Or Two Types.



secondary or booster effect is illustrated in those who at the time of vaccination possess antibody from a previous natural exposure (Figure 7). It is clear, in the latter group, that the major effect occurs as a result of the first injection.

To return to the group in which primary immunization was effected (Figure 6) it is evident that even the first injection induced a measurable response in the majority of persons and this response was of the magnitude illustrated at 12 days after inoculation. In other experiments in progress, in which

Figure 7

COMPOSITE CHART FOR TYPES 1,2 & 3 POLIOMYELITIS ANTIBODY SHOWING RESPONSE TO VACCINATION IN 17 PERSONS WHO BEFORE VACCINATION HAD ANTIBODY TO ONE OR MORE TYPES FROM NATURALLY ACQUIRED INFECTION.

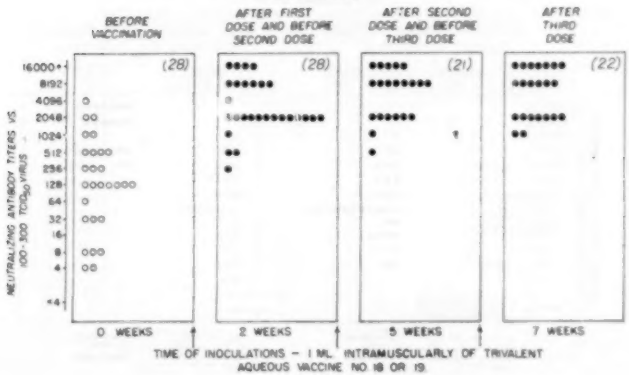
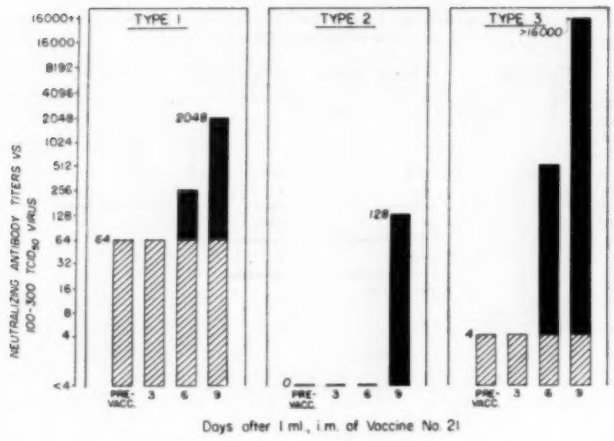


Figure 8

TIME OF APPEARANCE OF ANTIBODY AFTER A SINGLE INJECTION OF AQUEOUS POLIOMYELITIS VACCINE.



blood samples have been drawn at intervals of three days (Figure 8), it appears that antibody begins to become apparent between the third and sixth day, if there had been a prior immunologic experience with virus of the homologous type, or between the sixth and ninth day if there is no evidence of previous contact (i.e., Type 2 in Figure 8). Nevertheless, when three injections were given at 0, 2, and 5 weeks, the levels of antibody measured two weeks

Figure 9

DISTRIBUTION OF TYPES 1,2 & 3 ANTIBODY TITERS BEFORE AND AFTER VACCINATION WITH AQUEOUS, TRIVALENT POLIOMYELITIS VACCINES NOS. 18 AND 19 IN PERSONS WITH

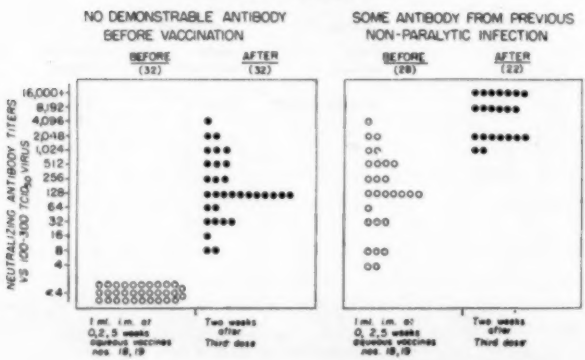
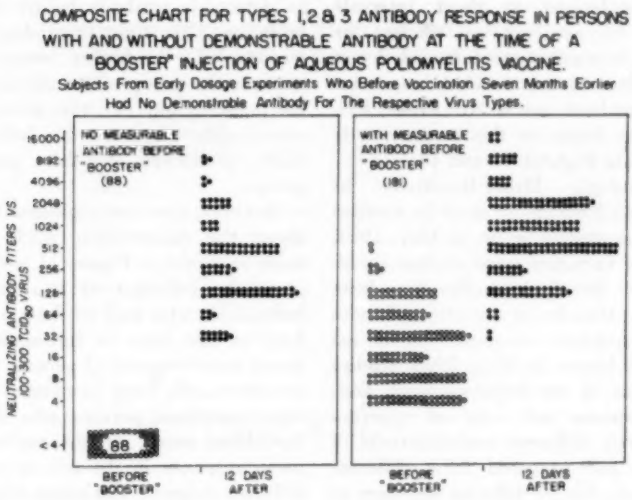
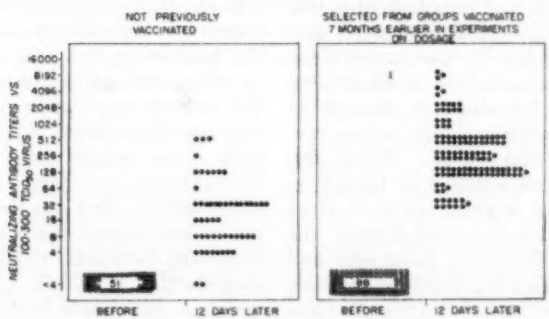


Figure 10



after the third injection appear to be comparable in distribution to that observed in persons who in the past had a naturally acquired nonparalytic infection (Figure 9). It is clear that three doses of vaccine within a five-week period (Figure 6) had not induced the levels of antibody that can be achieved by utilization of the longer interval before administering the booster dose, as was possible in persons in whom an interval of seven months had elapsed since primary immunization (Figures 4 and 5), or in persons who had a prior natural infection at some indeterminate time in the past (Figure 7). The data

Figure 11



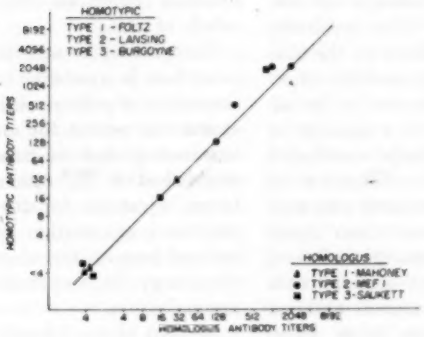
in Figure 9 suggest, therefore, that multiple inoculations at short intervals (Figure 6) are not as efficient as primary immunization followed by a booster dose at a somewhat longer interval than from two to five weeks. Evidence that bears on this suggestion is presented in Figures 10 and 11.

Immunologic Hyper-Reactivity in Vaccinated Persons—It is to be recalled that in the studies begun in May, 1953, numerous variables were studied simultaneously. Serologic studies have been completed thus far in a portion of more than 400 subjects involved. In the experiments begun in May, 1953, studies were made of the influence upon antibody response not only of vaccines treated with different concentrations of formalin and prepared from different virus pools, but of different numbers of inoculations and different sizes of inocula. For example, in some subjects one injection was given; in some, two; and in still others, three. Some inocula contained a total of 0.3 ml. of tissue culture fluid representing 0.1 ml. of each type; in many individuals a single injection of such material was all that was administered. It is understandable, therefore, that in the course of these exploratory experiments many individuals, particularly those given only one dose, would have responded poorly or not at all. This is reflected in Figure 10, showing that seven months after inoculation there were 88 instances in which antibody to Types 1, 2, or 3 was not detectable; in 181 instances Types 1, 2, or 3 antibody was measurable; this represents all data available for analysis in 269 instances in which there was no detectable antibody before vaccination in May, 1953. When the response to reinoculation at the seven-month interval is examined, it is clear that both groups responded sharply. The mean level achieved in those who had some demonstrable antibody at the time of inoculation was approximately four-fold higher than in the group that had no detectable antibody before the reinoculation. This is not surprising for two reasons: (1) the higher prevaccination levels in the group with antibody before the booster, and (2) this group might conceivably represent the better antibody producers in this population group.

However, the most significant feature about the observations made in this study is shown in Figure 11 which compares the behavior of two groups of individuals who had no detectable antibody at the time of inoculation; one group was composed of persons who had not previously been inoculated and the other contained persons who had been inoculated seven months earlier. The mean response in the two is strikingly different indeed. The range of antibody levels after vaccination in those who had not previously been inoculated was from < 4 to 512, with a mean in the region of 16; this was the response to a single inoculation in persons who did not possess any detectable antibody. Whereas in the 88 instances in which antibody was not present, but where vaccination, of borderline stimulation, had been employed seven months earlier, the response ranged from 32 to 8,192, with a mean value in the region of 1:256. Thus, it would appear that there is a sharp difference between what might be referred to as an "immunologically experienced negative" as compared with an "immunologically inexperienced negative." Accordingly, it would seem that inoculation even with poor antigens or with a minimal course of vaccination did have some effect even though not demonstrable in terms of detectable antibody seven months after the primary immunization procedure. However, the imperceptible effect was clearly brought out by the reinoculation. This has very important practical implications and suggests that it should be possible to maintain measurable levels of antibody

Figure 12

COMPARABILITY OF ANTIBODY TITERS FOR TWO DIFFERENT STRAINS OF THE SAME TYPE IN SAMPLES OF HUMAN SERA



for long periods of time, and to reinforce, or further enhance, these levels.

Preliminary Data from Studies on Different Strains of the Respective Immunologic Types—A very important question that remains to be answered is whether or not the different strains of each type of poliomyelitis virus are sufficiently similar so that any strain may serve as the prototype. This question arises because of differences among strains within each of the types of influenza virus, and in other groups of microbial agents that are immunologically complex. Data are available thus far in a comparison of two strains for each of the three types, i.e., the strains in the vaccine, which are called homologous, and one other strain for each type, which is called homotypic. The indication, from the limited data shown in Figure 12, is that the two arbitrarily selected viruses of each type are closely related immunologically. This chart is presented merely to indicate that thought has been given to the question that has been posed, and to show the first results available.

Clinical Observations in Vaccinated Subjects—In the course of the month after vaccination of approximately 4,000 children, with vaccine made in this laboratory, and of 3,000 children inoculated with vaccine prepared from fluids made at the Connaught Medical Research Laboratories, University of Toronto, and then processed in laboratories of producers of biological products, no untoward effects were observed either at the site of inoculation or systemically. There was but one instance of transient urticaria of a mild degree in one child who was reported, by the parent, to be allergic to penicillin. Prior to skin test and reinoculation, the child's pediatrician was consulted and he reported that he had given the child penicillin many times without any symptoms suggestive of penicillin allergy. The report from the parent was that the child had hives following an injection, thought to be penicillin, administered on a trip to Mexico City some four years earlier. It is possible that the episode four years earlier, as well as the one associated with the first inoculation of vaccine,

may have been coincidental. On the other hand, one must keep in mind that the vaccine can be an offender in penicillin-sensitive individuals since the culture fluid used for the preparation of vaccine contains a maximum of 500 units of penicillin/ml (the antibiotic activity is markedly reduced by the time the vaccine is finally processed). However, many children believed to be allergic to penicillin or to a number of other allergens have been vaccinated without any discernible difference in clinical reactivity as compared with nonallergic children. Observations made in the course of one month indicated that the rate of absenteeism in both inoculated and uninoculated children was similar; the reasons being essentially the same in both groups. This is illustrated in Table 3. Thus it would appear that the absence of untoward local or systemic effects, observed in the course of earlier studies, continues.[2-4]

Discussion

Perhaps it would be best to summarize and discuss the new findings presented here in the form of answers to practical questions that exist in the minds of many.

First, it may be said that a practicable procedure is available for inducing the formation of poliomyelitis antibody that appears to persist for an, as yet, undetermined period of time. Still to be established is the optimal interval between injections for the most effective primary immunization schedule, and the optimal interval for whatever reinoculations may be required for long-term immunization.

As part of the foregoing, there is the further problem of determining the minimal amount of virus necessary to produce the desired level of antibody for immunity. In this regard, it is pertinent to mention that the efficiency

Table 3—Absenteeism Among Groups of Vaccinated and Nonvaccinated Children in First Three Grades Beginning on the Day After Inoculation

	Vaccinated (2520) *		Nonvaccinated (1289) †	
	Number	Per cent	Number	Per cent
First Week				
1 day	228	9.0	130	10.1
2 days	70	2.8	35	2.7
3 or more days	84	3.3	38	2.9
Second Week				
1 day	175	6.9	122	9.5
2 days	43	1.7	24	1.9
3 or more days	66	2.7	36	2.7
Third Week				
1 day	70	2.8	32	2.5
2 days	5	0.2	6	0.5
Duration unknown ‡	104	4.1	45	3.4

* Vaccine prepared for field tests was used.

† Includes only group in which consent for vaccination was not given and does not include those absent on day of vaccination.

‡ Easter week-end.

(Table derived from analysis made by Mr. Morton Boisen and Dr. Robert Korns of Dr. Thomas Francis's staff of the Poliomyelitis Vaccine Evaluation Center, University of Michigan, Ann Arbor, Mich. Report in more detail to be made.)

of virus cultivation has increased beyond earlier expectations and that several liters of fluid of high virus titer can be obtained regularly from cultures of kidney tissue of a single monkey. The final limit of yield may, as yet, not have been reached.[5]

Further experience with inactivation of virus by formaldehyde and studies on the retention of antigenic activity upon "overexposure" during the virus-inactivation procedure indicates that a substantial margin of safety exists between the point at which it may be presumed that the last virus particle has been converted to the noninfectious form and the point at which antigenicity is significantly reduced.[5]

Because of the fact that virus for vaccine is propagated in cultures of monkey kidney tissue, some have wondered whether or not immunization with such vaccines may have some damaging effect upon the kidneys. Although, on a priori grounds, there is little reason to believe that this might occur, this question has been the subject of continued study, in a variety of ways, and there are no indications thus far of any harmful effect upon the kidney, either in experimental animals or in man.[6]

The question has also been raised as to the possibility of sensitization to the Rh factor, since vaccine is derived from cultures of monkey tissue. It is difficult to visualize how this might occur, particularly since it appears that the Rh antigen is not a soluble one but one associated with red cells or stroma. In the absence of particulate material, which is removed from the fluids by passage through bacteria-withholding filters, it would be difficult to see how the Rh antigen might be retained in the fluid used for immunization. Nevertheless, this question is under study by interested investigators and their reports will be made in due course.

Although the objective of these studies is the creation of a barrier within the circulatory system, and even along nerve pathways, that might prevent virus from gaining access to the central nervous system, it would be equally acceptable if the immunizing procedure were so satisfactory as to prevent the establishment of infection. Whether or not infection is prevented is of academic importance if the paralyzing effect of virus invasion does not occur. Since procedures are now available for inducing and maintaining antibody formation, and since evidence has been presented indicating that a state of heightened immunologic reactivity is produced by vaccination, it would seem reasonable to determine whether or not the immunologic effects of vaccination result in protection against paralysis under natural conditions of exposure.

The principal question that can be answered only by studies under natural circumstances will be, "Does a procedure that induces antibody of a certain level have a corresponding effect in the prevention of the paralytic disease?" If the correlation is incomplete then the question to be answered will be, "What are the factors responsible for any lack of correlation between presence of antibody in the serum and clinical immunity?" The many factors to consider are: (1) whether or not there are but three immunologic types of poliomyelitis virus; (2) whether or not there are major immunologic differences among strains within each type; and (3) whether or not the level of antibody induced is sufficient to intercept virus before invasion of the central nervous system, not only via the blood stream but via nerve pathways, since the relative frequency of the two modes of pathogenesis is not yet known.

It is clear that only by studies made in the course of application of vaccination under natural circumstances can these questions be answered. The evidence is clear that it is possible to induce antibody formation with a non-

infectious vaccine and that the antibody so induced tends to persist at demonstrable levels for a period of time, the full length of which is still to be determined. An equally interesting finding is the observation of a sharp rise in antibody titer that occurs following a suitably spaced booster injection. The term "booster" is strictly applicable only to injections that are made after intervals that are sufficient to allow adequate development of the state of immunologic hypersensitivity which is a prerequisite for the booster effect. It would appear from the data here presented that the term "booster" cannot be applied to the last of a series of three injections given within a five-week interval; a clearly demonstrable booster effect was achieved when an interval of seven months had elapsed since primary immunization. Studies now under way are designed to determine the shortest interval within which the booster response can be elicited for the full immunization effect.

Thus, within time limitations for setting up the field tests on efficacy of vaccination, during the summer of 1954, the only test that can be made is to determine the influence of primary immunization. This will provide an extraordinary opportunity to obtain an answer to some very important theoretical as well as practical questions. It will be of interest to know whether or not the course of immunization being employed, without sufficient time for the full booster response, induces full or partial resistance; it will be of further interest to determine whether or not the natural exposure will provide the booster stimulus to reinforce any basic immunity that is provided by so-called primary immunization effect. If this be so, then it would suggest either that a sufficient level of antibody is present at the time of exposure or, if low or not demonstrable, that sensitization of the antibody mechanism by vaccination was adequate and that the interval between infection and the reappearance of antibody may be shorter than the incubation period for central nervous system invasion.

One might question the justification for the conduct of a study such as the one under way when it is known, from the immunologic evidence here presented, that a different schedule of immunization is capable of producing a more substantial effect. The answer to this question might well be, "What justification is there for not proceeding with test of a procedure that on theoretical immunologic grounds, and thorough laboratory studies in experimental animals, as well as observations in man, indicate that the presence of antibody in serum, even in low levels, may be capable of preventing paralysis—at least in some individuals." Since the final answer to the question of efficacy of any procedure can be had only by direct test, it would seem that only by proceeding in the manner currently under way can any progress whatever be made in gaining the ultimate objective—the prevention of paralysis in children.

No experiment, well conceived, ever fails. We must keep an open mind and, based upon whatever findings are made, plan for the next step beyond.

Summary

Results of serologic tests in human subjects indicate that: (1) By the proper use of a suitably prepared noninfectious vaccine, formation of antibody can be induced; and in many instances, concentration of antibody in the serum can be raised to levels corresponding to those found in persons who have had a naturally acquired infection. (2) Primary immunization appears to sensitize the immunologic mechanism in a manner similar to that observed in persons who have had a natural infection. It

would appear from the data here presented that the term "booster" cannot be applied to the last of a series of three injections given within a five-week interval; a clearly demonstrable booster effect was achieved when an interval of seven months had elapsed since primary immunization. Clinical-epidemiologic observations in the course of one month following the use of laboratory prepared vaccine in 4,000 and vaccine processed by producers of biologicals in 3,000 indicated no untoward effects, either local or systemic. The question of penicillin allergy has been mentioned.

The implications of these findings in relation to the tests on efficacy of vaccination in 1954 are discussed.

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National Health Council Directory

The 1954 Directory of Member Organizations was published by the National Health Council in June. It is made up of capsule descriptions of the broad objectives, immediate program, services, structure, and sources of financial support of 48 national organizations that are presently members of the council. Also shown are the names of the executives, addresses of the headquarters offices, and publications of the 48 members. The membership includes professional and voluntary health organizations, citizen agencies with an interest in health, federal health organizations as advisory members and two sustaining members.

The volume is printed in large type and is a convenient size for ready reference. National Health Council, 1790 Broadway, New York 19, N. Y.; 50¢. Reduction on quantity orders.

Is the Premature Baby Worth Saving?

V. MARY CROSSE, O.B.E., M.D., D.P.H., F.A.P.H.A. (Hon.)

Findings of an intensive one-year follow-up of over 10,000 premature babies born in one city (of Great Britain) are compared with long-term studies in Sweden, Norway, and England—the combined result being a useful body of statistics against which to measure our local experiences in the same field.

In England premature babies (babies with a birth weight of 2,500 gm. and less) account for approximately 60 per cent of the deaths during the first four weeks of life and 40 per cent of the deaths under the age of one year.

Because of our falling birth rate, we are anxious to save as many babies as possible. Greater efforts are being made to increase the survival rate of the 40,000 premature babies born each year in Great Britain and, indeed, more of these children are being saved every year. The provision of a country-wide premature baby service is expensive, but is well worth while if the babies develop into normal, healthy individuals, and not, as some people suggest, into weakly, stunted, underweight, maladjusted, mentally defective children who will be a burden on the community.

In Europe several investigations into the development of premature babies are either in progress or have been published recently. In Birmingham, since 1945, all premature babies born in the city (over 1,300 each year), have been followed up to the age of one year. In addition, a long-term study of 1,500 prematures and 3,000 controls is in progress.

Alm [1] of Sweden has made a follow-up study of 999 premature boys and 1,002 controls born in Stockholm hospitals during the 20-year period 1902–1921.

Blegen [2] of Norway investigated 541 surviving premature babies (both sexes) and compared them with controls of equal social status. The babies were born in Oslo during the period 1930–1939.

A national maternity survey was undertaken in Great Britain by a Joint Committee of the Royal College of Obstetricians and Gynecologists and the Population Investigation Committee.[3] This covered all births in England, Scotland, and Wales during the week March 3–9, 1946 (approximately 15,000). The premature babies born during this week have been followed up by a Joint Committee of the Institute of Child Health (University of London), the Society of Medical Officers of Health, and the Population Investigation Committee, and reports on their health and growth have been published by Douglas and Mogford.[4, 5]

When assessing the development of premature babies, the cause of the low birth weight is of great importance. Although it is convenient for statistical purposes to group together all babies of low birth weight and call them premature babies, such babies form a very heterogeneous group, resulting from such vastly different causes as congenital malformations, plural birth, trauma, prenatal complications, and small parents; and as a group, they include an excess of females and babies of parents in poor financial circumstances. It is obvious that premature babies cannot be compared fairly with mature babies unless cases of congenital malformation

are excluded and the remaining babies matched in regard to such factors as sex, plurality, birth order, height and weight of parents, and financial circumstances. Many of these factors not only influence the birth weight but also influence subsequent development.

Allowance must always be made for the degree of prematurity. Gesell [6] has shown the necessity for correcting the age of a premature baby, i.e., deducting the weeks of prematurity from the chronological age. This is particularly important when assessing the development of a baby: as the child grows older the difference between the corrected age and the chronological age becomes a progressivly smaller proportion of the latter and the child appears to "catch up" with children born at term. The findings of the four European surveys already mentioned will be considered in regard to growth (weight and height), physical and mental handicaps, health, and social adjustment.

Growth (Weight and Height)

The 11,000 premature babies in the Birmingham "one-year survey" include all premature babies born alive in the city since 1945. This follow-up is part of the city service for premature babies. It was not designed for the purpose of estimating the effect of uncomplicated prematurity on development, but it shows very well the effect of the whole heterogeneous group of babies known as premature babies on the community. This follow-up can also be used to confirm or disprove findings in the "long-term survey." The "long-term survey" includes all premature babies born alive or dead in Birmingham during the period of one year from July 1, 1948, and every sixth baby weighing more than five and one-half pounds at birth, born alive or dead, during the period—1,598 premature and 2,974 controls.

The "long-term survey" is fairly comprehensive; it allows both groups to be studied in relation to sex, plurality, birth order, age of mother, month of birth, housing, financial circumstances, employment of mother, prenatal care, prenatal complications, type and place of confinement, fetal malformation, method of feeding, pediatric care, etc. So far, it has only been possible to analyze this survey for the first year of life; an analysis up to the age of five will be undertaken next year. In both surveys, up to the age of one year, even when allowances were made for the degree of prematurity of each baby, the averages for weight and height among the prematures were slightly smaller than among the controls; but the premature groups included an excess of females (57 per cent) when compared with the control groups (46 per cent), a greater proportion of illegitimate babies (6.0 per cent compared with 2.1 per cent among the controls), and more babies with congenital malformation (1.0 per cent compared with 0.5 per cent among the controls).

In the Swedish investigation, males were matched with males, but even so, Alm reports a slightly lower average height and weight for the prematures than for the controls at the age of 20 years. His cases were all legitimate and were born in hospitals, but no attempt was made to match prematures with controls.

In the Norwegian investigation, even when compared with full-term children of similar social background, the prematures were slightly shorter and lighter than the controls.

In the British National Survey, nearly

Among other appointments, Dr. Crosse is in charge of the Premature Baby Unit at Sorrento Maternity Hospital, Birmingham, England.

This paper was presented before the Maternal and Child Health Section of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

500 legitimate single-born premature babies were matched with an equal number of legitimate single-born mature babies of similar sex and birth order, with parents of similar age and social class, and from the same locality. Reporting on the growth of these babies, Douglas and Mogford state that 36 per cent of the premature babies had caught up with or surpassed their controls in weight, and 44 per cent in height, by the age of four years. They found no satisfactory evidence that babies resulting from the shorter gestations or from complicated pregnancies differed in their rate of growth from the rest of the premature sample; indeed, there was a tendency for babies with the smallest birth weights to be the most successful in eliminating their initial weight and height handicaps. The mothers of the children who had eliminated these handicaps by the age of four years were as tall and heavy as the mothers of the controls. In contrast, the mothers of children who were still lagging behind at this age, were significantly shorter and lighter than the mothers of the controls. These workers also found no satisfactory evidence that premature babies in well-to-do families reduced their handicaps more quickly than those from the poorer families. In this survey, no allowance was made for the degree of prematurity, but at the age of four years this would make little difference to the results.

Physical and Mental Handicaps

In the Birmingham surveys, of the babies surviving at the age of one year, 1.0 per cent of the prematures and 0.5 per cent of the controls suffered from defects that were definitely congenital in origin, and 0.8 per cent of the prematures and 0.4 per cent of the controls from defects which might have been either congenital or acquired. A higher incidence of congenital defects must be expected among premature babies because approximately 25 per cent of malformed babies are born prematurely,[7] but malformations are the cause and not the result of prematurity. Other defects resulted from birth injury, kernicterus, or retrolental fibroplasia, and included hydrocephaly, spasticity, deafness, mental retardation, and blindness. The increased susceptibility of premature babies to these complications was a true hazard of prematurity and this hazard was greatest among the smallest babies.

The Swedish prematurely born children who survived from the first two to three years of life, had a moderately higher incidence of "such disorders that are usually considered to be associated with birth injuries," when compared with the controls. This was judged by the number in each group who required institutional care or pensions for mental and physical handicaps. There was no significant difference between the two groups in regard to children attending special educational classes.

Blegen of Norway found slightly more defects among the premature children than among the controls, especially in regard to eye conditions, hernia, and nervous manifestations. Even when children with similar social backgrounds were compared, the scholastic achievements of the prematures were slightly less good than those of the controls. In regard to practical subjects (sewing, woodwork, and drawing) the prematures were equal to the controls. Small prematures did as well as the larger prematures.

Douglas and Mogford found impaired vision was the only serious physical defect that was more common among the premature children at the age of four. They were surprised to find that gross defects, other than cataract, were equally common among the surviving premature children and their controls, especially in view of the earlier high mortality from

congenital defects among the premature children; but their numbers were small (464 pairs).

Health

Alm found a considerable excess of mortality from infections among the prematurely-born before the age of two years. The difference in mortality between the prematures and controls evened out between the ages of two and three years. Among the survivors, apart from the slightly higher incidence of physical handicap already mentioned, there was no difference between the two groups in regard to health.

Douglas and Mogford report a higher mortality among premature babies which extended beyond the first month of life and was largely accounted for by deaths from congenital defects and lower respiratory infections. After the age of two years the premature children appeared to be as healthy as those born at term. Birmingham figures in regard to illness have not yet been analyzed, but mortality figures confirm the excessive death rate from congenital defects and infections among premature babies during the first two to three years of life.

Social Adjustment

No significant or probable difference was found between the Swedish prematurely born children and their controls. These findings were based on fitness for active service and military promotion of those fully fit, the receipt of various forms of public assistance (relief for unemployment, poverty, or sickness), the net income earned, and convictions for crime and drunkenness.

Discussion

The development of any particular premature baby depends on many factors which include the cause and degree of prematurity; the presence or absence of complications of pregnancy, labor, and the neonatal period; the quality of obstetric and pediatric care; and last, but not least, on the physical and economic status of the parents. If a premature baby is born free from congenital defects and escapes birth injury and asphyxia and neonatal complications, prematurity per se does not seem to alter the normal course of development if an allowance is made for the degree of prematurity. There is little doubt that premature babies are more prone than mature babies to natal and neonatal complications which affect subsequent development, but good obstetric and pediatric care can do much to diminish this risk.

As more premature babies are being saved each year, it is important to estimate their effect on the community as a whole. Will they affect the mean height and weight of the nation? Will more hospital beds be required? Will more accommodations be necessary for mentally and physically handicapped children?

In the British survey the premature babies provided more than their share of stunted and underweight children (children more than one standard deviation below the mean of all babies in the survey for either weight or height or both). Among the premature babies, 14 per cent fell into this category, compared with 9 per cent of all children in the survey; but the removal of all the premature babies from the survey would only have reduced the proportion of stunted children from 9.0 per cent to 8.1 per cent. Even this figure overstates the case for it does not allow for the fact that the premature babies came from poorer homes and included an excess of females.

In the same survey the premature children showed a slightly higher incidence of hospital admissions during the

first two years of life. After this age they were no more likely to be admitted than the controls. Considering all children born during the week of the survey, the premature babies received approximately 8 per cent of the total maternity hospital care, 11 per cent of all hospital care in the first two years, and only 3 per cent in later years.

In regard to children requiring special care the surveys in Birmingham and Sweden both showed a slightly higher proportion of handicapped children among the prematurely born, but the removal of all premature babies from the Birmingham survey at the age of one year only reduced the proportion of children with mental and physical handicaps from 0.95 per cent to 0.90 per cent. Although a proportion of these handicaps were due to complications of prematurity, more than half were due to congenital malformations and not prematurity.

In Sweden the prematurely born babies have not required the provision of extra public assistance and their ability to do military service has been equal to that of the controls. These facts, and the previously mentioned social adaptation of the prematures (no increased incidence of crime or drunkenness), has led Alm to believe that the prematures are no more of a burden on the community than were the controls, and that, in most respects, they do as well as the controls.

Considering the results of these three surveys, it would appear that the only hazards of prematurity itself are: (1) a relatively high mortality up to the age two to three years; (2) an increased susceptibility to infections during the first two years of life; and (3) a slightly increased risk of intracranial birth injury and kernicterus, and a greatly increased susceptibility to retrolental fibroplasia; but good obstetric and pediatric care can prevent some, though not all, of these complications.

In my opinion, premature babies born free from incurable malformations are well worth saving.

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Mosquito Field Research Center

The Florida State Board of Health has approved plans for a new mosquito field research center and laboratory, said to be the first developed by any state. The new facility will be located on a 28 acre tract in Indian River County approximately half of which is a salt marsh area. Construction bids will soon be sought for the story-and-a-half building.

The center will provide for laboratory quarters, specially designed rooms to breed insects experimentally, office quarters, conference room, a library, and workshops. The building is part of $1,500,000 project set up by the legislature for permanent mosquito elimination measures. The new laboratory will be under the direction of Dr. Maurice Provost.

Collection and Analysis of Dietary Intake Data

ROBERT B. REED, Ph.D., and BERTHA S. BURKE, F.A.P.H.A.

The periodic interview as a scientific instrument for measuring the average daily protein intake of the child is subjected to sharp critical scrutiny and statistical examination. The accuracy of this instrument needs constant assessment, the writers indicate.

The problem of measuring human dietary intake is a complicated one which may be approached in two quite different ways. Under certain happy circumstances it is possible to observe the foods eaten and weigh or measure them by the customary technics of the physical sciences. Under other conditions it is necessary to measure the dietary intake by asking the subject to recall and estimate the kinds and amounts of food eaten. We are concerned here with the problem of measuring the dietary intakes of children between the ages of one and six years who are living at home. The data we shall report form a small part of the material collected in a longitudinal study of health and development of children from the prenatal period to 18 years of age.*

In the context of this research project, where continuous observation over a period of many years was needed, it was impractical to attempt direct observation of dietary intakes through weighing technics. We have, therefore, not attempted to measure by means of the balance and the graduate but have used instead an interview technic to obtain our observations. However, in abandoning the usual scientific instruments for measuring quantities of matter, it has not seemed necessary to abandon the scientific attitude toward the instrument we have used, i.e., the dietary history. Therefore, we have made an attempt to examine the reliability and validity of the dietary history in the same sense that one scru-

* Dr. Stuart is the director of this study and all of the dietary data have been collected under the supervision of Mrs. Burke.

Dr. Reed is associate professor of biostatistics and human ecology, Department of Biostatistics, and Mrs. Burke is associate professor of maternal and child nutrition, Department of Maternal and Child Health, School of Public Health, Harvard University, Boston, Mass.

This paper was presented before a Joint Session of the American School Health Association and the Food and Nutrition, Maternal and Child Health and Statistics Sections of the American Public Health Association at the Eighty-first Annual Meeting of the American Public Health Association in New York, N. Y., November 11, 1953.

This is a discussion of the reliability and validity, of the dietary intake data of children between the ages of one and six years, in a longitudinal study of health and development.

The data presented is from the longitudinal study of health and development of children being carried out under the supervision of Harold C. Stuart, M.D., professor of maternal and child health and head, Department of Maternal and Child Health, School of Public Health, Harvard University. This study was begun under a grant from the General Education Board of the Rockefeller Foundation; carried forward under grant from the James Foundation; and now being completed under grant from the Public Health Service, supplemented by grants from the Nutrition Foundation, Inc., and from the Association for the Aid of Crippled Children.

tinizes any instrument designed to make careful and complex observations.

It is axiomatic that one cannot obtain a clear picture of the limitations and capacities of an instrument without understanding its structure and the manner in which it functions. Therefore, before discussing the reliability and validity of our measurements of food intake your attention is called to the principal features of the dietary history interview as an instrument of observation and measurement.

Instrument

It is not our purpose to discuss here in any detail the methods employed in this type of dietary history.* However, as background we point out briefly the important aspects of this dietary history technic:

1. It is an instrument designed to measure the average nutrient intake of an individual during a considerable period of time. For example, in order to know the average daily nutrient intake in the period from one to six years of age of each child in our growth study such a history was obtained every six months from the mothers of these children.

2. The essential parts of this technic are: (a) a cooperative and intelligent informant, usually in this age group, the mother; (b) a nutritional interviewer trained in this technic; and (c) a standard set of procedures for translating lay descriptions of diets into scientific units of nutrient intakes. Persons wishing to use this type of dietary history need to realize that considerable time is required to develop sufficient skill in this entire technic.

3. The person (usually a nutritionist) trained in this technic must gain the confidence and cooperation of her informant. The informant should never feel hurried and should have been made aware of the interviewer's interest in her. It is also important that the informant realize the importance of her part in the interview and in this way be motivated to cooperate to the limit of her ability.

4. The interviewer records the subject's usual pattern of eating both at and between meals in common household measures and the extent to which the usual pattern of eating varies. If these variations are so extreme that the individual has no clear pattern of eating, it may be impossible to determine "the average daily food intake." In such a case it will be impossible to complete this type of history.

5. The next step is referred to as the "cross-check." In this step the interviewer reviews with the informant the subject's average intake in terms of specific foods or food groups. This serves to verify and clarify the information obtained as the usual pattern of eating. It checks possible omissions and minimizes errors in estimating amounts of food eaten. The "cross-check" is an important aspect of this technic and when properly used by a skilled interviewer contributes greatly to the reliability of the dietary data obtained.

6. After the completion of the interview the interviewer decides from a consideration of the usual intake and the information obtained in the "cross-check" the amount of each food or food group representative of the subject's average daily intake.

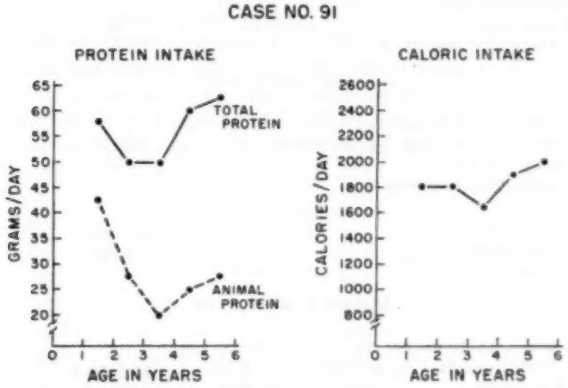
7. The average daily intake of food is then calculated in terms of nutrient intakes. A composite table of food values (from standard sources) is used not only to save time in calculation but to make for greater accuracy and uniformity between cases.

Three widely different cases have been selected to illustrate the type of in-

* Burke, B. S. The Dietary History as a Tool in Research. J. Am. Dietet. A. 23:1041-1046 (Dec.), 1937.

formation that this technic gives. First, let us look at Case No. 91. The graph at the left shows Mary's average daily intake of total protein in grams from one to six years of age, and also the corresponding amount of animal protein in her diet. At the right is the graph of her average daily caloric intake for the same period. Below the graphs are Mary's intake of protein-rich foods by years.

What is there in Mary's case history that might indicate that this child's intake of protein did fall and rise as the points on the graphs indicate? Between one and two years of age Mary had an



Changes in average daily food intake of protein between 1 and 6 years of age. (The average nutrient intake for each yearly interval is plotted at the half-year point.)

Food Sources of Protein		Protein gm./Day	
Between 1 and 2 Years			
Milk, whole, 30–32 oz. per day	30–32	41–44 (42.5)	56–59 (57.5)
Meat, lean, 1.5–2 oz. 3–4 times a week	5		
Egg, average 6 per week	5		
Other animal food sources	1–2		
Vegetables and fruit	4	15	
Bread and cereal	10		
Other plant food sources	1		
Between 2 and 3 Years			
Milk, whole, 16–20 oz. per day	16–20 *	25–30 (27.5)	50
Meat, lean, 1 oz. per day, 5 times a week	5		
Egg, average 4 per week	3 *		
Other animal food sources	1–2		
Vegetables and fruit	9 †	22.5	
Bread and cereal	12		
Other plant food sources	1–2		

Case 91 (continued)

Changes in average daily food intake of protein between 1 and 6 years of age. (The average nutrient intake for each yearly interval is plotted at the half-year point.)

Food Sources of Protein		Protein gm./Day	
Between 3 and 4 Years			
Milk, whole, 16–18 oz. per day	16–18	19–21 ‡ (20)	50
Meat, lean, 1 oz. 3–4 times a week	3		
Egg, practically none	–		
Other animal food sources, practically none	–		
Vegetables and fruit	6 **	30	
Bread and cereal	23		
Other plant food sources	1		
Between 4 and 5 Years			
Milk, whole, 18–20 oz. per day	18–20	24–26 (25)	60
Meat (lean), or fish, 2 oz. 3 times a week	5		
Egg, 1–2 per week	1		
Other animal food sources	–		
Vegetables and fruit	5	34.5–35.5 (35)	
Bread and cereal	27.5		
Other plant food sources	2–3		
Between 5 and 6 Years			
Milk, whole, 16–21 oz. per day	16–21	24.5–30.5 (27.5)	62.5
Meat (lean), or fish, 1 oz. per day	6		
Egg, 2 per week	1.5		
Other animal food sources	1–2		
Vegetables and fruit	9	35	
Bread and cereal	22		
Other plant food sources	4 §		

* Milk and egg protein falls 15 gm. per day, due largely to lack of money
† Potato protein increases considerably
‡ An additional drop in animal protein, due to even less money for food than in previous period
** Potato intake decreased
§ Considerable intake of peanut butter

excellent appetite. In fact, her weight gain in this period was excessive (from 28 lbs., 12 oz., to 37 lbs.). Between two and four years her protein intake fell, especially the animal protein. The medical and social records substantiate this drop in food intake. Her father became unemployed and the family was on relief throughout this period. With six in the family they were forced to a very limited dietary regime. The total income was reported as about $15 per week.

The mother reporting this low intake of food stated, also, that Mary's appetite was excellent. The medical and social records for the same period also indicate that the mother was having considerable difficulty managing Mary and that the child had become moody, obstinate, disobedient, and destructive and that she often tried to hurt her playmates. Between three and four years when animal protein fell to 20 gm. per day the amount of bread and cereal foods increased so that the total

protein did not drop below that of the two and one-half year level. When Mary was from three to three and one-half years of age her family had their most difficult period of financial and social stress. In the following six months her father earned a little more money and Mary's mother obtained part time work at $11 per week. Food was bought more intelligently and better balanced meals were worked out. The diet was high in whole grain bread and cereals, molasses, moderate amounts of milk, and small amounts of egg and meat. Despite the monotony of the diet, this child's appetite never lagged.

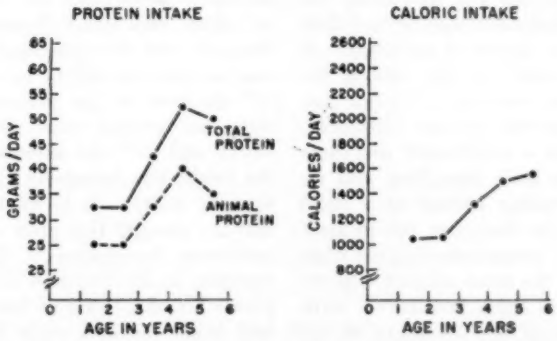
Case No. 125 shows the graphs for a child whose protein and caloric intakes were relatively low in contrast to Case No. 91. The description below the graph tells the feeding difficulties of this child and the ways in which they affected her food intake.

Case No. 74 shows the pattern of eating of a child with an apparently uneventful dietary history.

Statistical Measurement of Reliability

The first consideration in assessing the performance of any measuring instrument is an examination of its reliability, i.e., the ability of the instrument to agree with itself. This is usually

CASE NO. 125



In contrast to Case No. 91 this child had a relatively low intake of protein and calories between 1 and 6 years of age. She was a premature infant with some feeding difficulties in her first year.

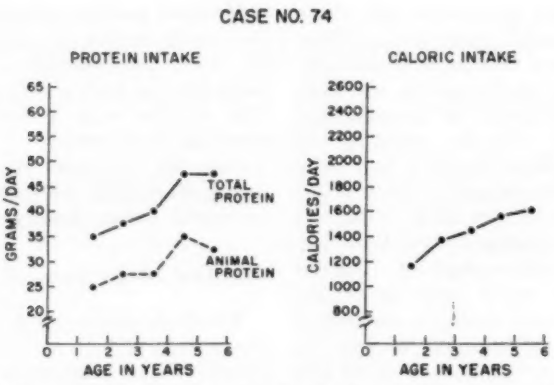
Between 1 and 2 years of age Case No. 125 had a fair to good appetite for foods she liked. She disliked milk and eggs which her mother tried to force her to eat. Candy and other foods high in carbohydrates were often eaten between meals.

Between 2 and 3 years similar conditions continued and she was called finicky about food.

Between 3 and 4 years because her mother became concerned about the condition of the child's teeth (9 cavities and 1 tooth beyond filling at the 3½-year examination) a pediatrician and a nutritionist discussed the feeding difficulties which she experienced. Suggestions for handling the situation were given the child's mother. Following this, improvement resulted in the dietary intake. At the 4-year examination the mother was encouraged to work for further improvement.

Between 4 and 5 years despite the fact that this child had whooping cough she was taking close to 1 qt. of milk daily and her total intake of food was good.

Between 5 and 6 years her appetite was called fair. She had further trouble with her teeth and apparently did not feel well. At this period her milk intake fell, but the total intake of calories rose because of increased candy and other sweet foods. Throughout she continued to dislike many foods of a bland nature.



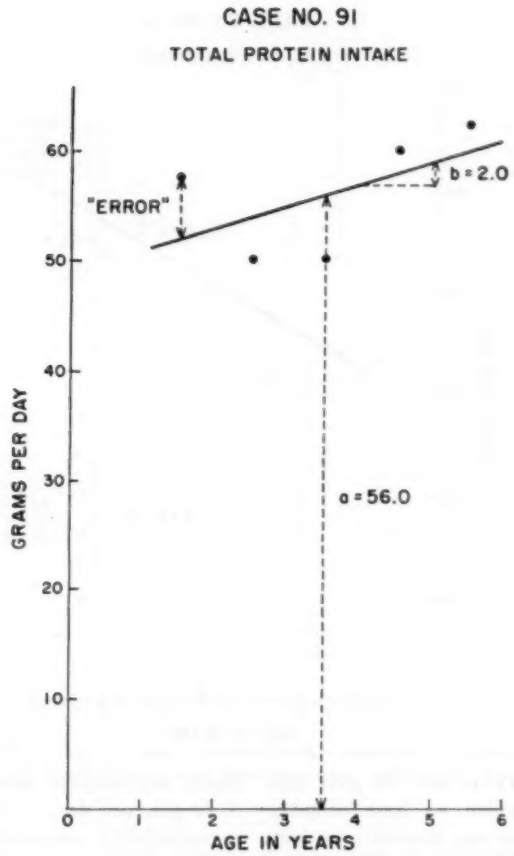
Case No. 74 is a girl whose pattern of eating in the period from 1 to 6 years of age follows a middle of the range course as is typified by the graphs shown. While these were difficult years for the family in many ways, the child's appetite and eating habits never seemed to reflect these strains to any marked extent.

tested by applying the instrument repeatedly in identical situations and then examining the degree of uniformity of the measurements. In the case of the dietary history, however, it is not possible to repeat the process identically. A mother and a nutritionist who have just spent an hour describing and recording the eating pattern of a child cannot wipe the interview out of their memories and immediately begin a fresh discussion of the same subject. Nevertheless, it does seem possible to learn something about the reliability of the method by examining histories which are obtained year after year in the longitudinal follow-up of individual children.

Attention is called to the first step taken in the longitudinal analysis of dietary intakes. Again, a different type of graph for Case No. 91 shows the intake of total protein between the ages of one and six years. In addition to the five annual observations represented by dots, this graph shows a straight line which has been fitted * to these points. This line is intended as an approximate summary description of the manner in which this child's protein intake changed over the preschool years. It may be characterized by two quantities: "a" the level of the protein intake at three and one-half years (56.0 gm. per day); and "b" the amount by which the intake was increasing (2.0 gm. per day per year). It is all too obvious that the straight line gives only an approximate description of the facts as reported in the nutrition history. The points between two and four years fall well below the line, while those before and after that period fall above the line by varying amounts.

In general, the children in our series show a fairly regular linear increase in protein intake from one to six years of age. Thus, we might assume that the straight line represents the closer approximation to the true facts and that the deviations of the points from this line represent errors in measurement. Opposed to this interpretation is the discussion of Case 91 in which reasons are presented, primarily economic, for believing that this child did, in fact, experience an initial decline and a later increase in protein intake. On this basis

* These trend lines have been fitted by the method of least squares

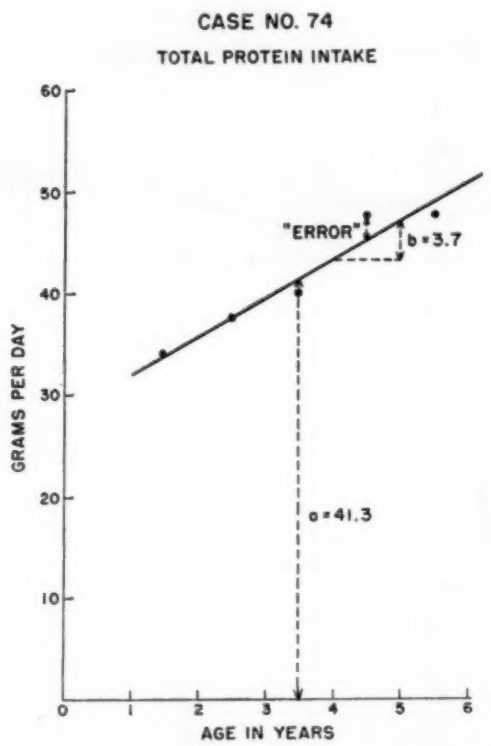


we might assert that the points represent truth and the line is in error.

The actual situation undoubtedly lies somewhere between these two extremes. That is, the deviations of the points from the line are partly due to real fluctuations in the child's pattern of protein intake and partly to errors of observation. Since we have been unable to differentiate between these two parts, we have carried out our analysis as if the deviations of the points from the line were entirely due to errors of measurement. Thus, we believe that the statements we shall make about the magnitude of these "errors" represent maximum estimates and that our true errors are somewhat smaller.

The next graph for Case 74 presents in similar fashion the data on protein intakes. Note that the observations for this individual not only followed a different trend line of protein intake, but also followed it with a slightly greater regularity. Again, however, we have called the deviations of the points from the line "errors." Thus, in these two cases we can see 10 "errors," one for each observation.

Proceeding in this fashion through

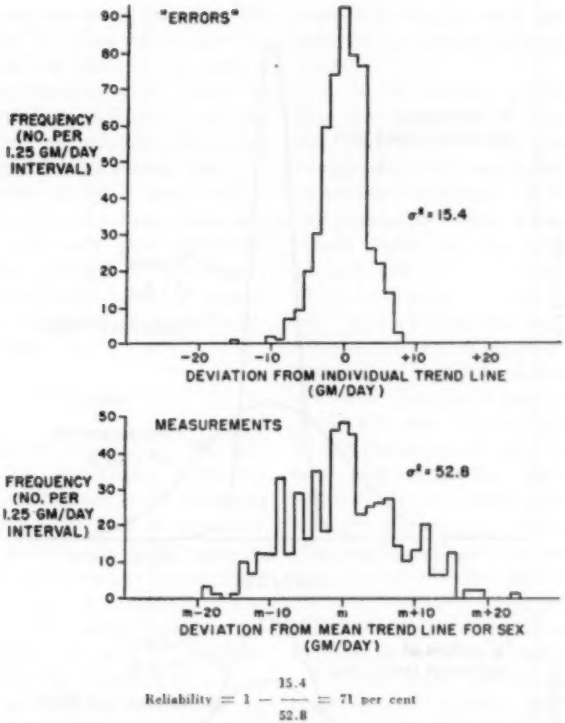


103 cases, 54 boys and 49 girls (the number for which we have complete data during this age interval), we have accumulated 515 errors. Their distribution according to size is shown in the upper part of Graph 1. Note that this distribution shows the characteristic shape of the normal curve of error. Its most important characteristic, i.e., the amount by which the errors tend to spread up and down the scale and thus differ from zero may be summarized by the standard deviation which has the value of 3.9 gm. per day.*

In general terms it appears that our instrument yields results which are highly reproducible within a range of ± 10 gm. per day. Is this degree of reproducibility adequate? To answer this question we must ask another—adequate for what purpose? Our immediate objective in the study of health and development is to determine how patterns of dietary intake of individual children may be related to their health and development. Therefore, we must measure dietary intake with sufficient precision to enable us to differentiate without excessive error between the intakes of different children. We must be able to separate the big eaters from the little eaters.

The lower section of Graph 1 shows how much these children differed from each other in protein intake. As indi-

* This is a universe estimate of the standard deviation of the error distribution and is based on the total of 309 degrees of freedom.


"ERRORS"
FREQUENCY (NO. PER 1.25 GM/DAY INTERVAL)
σ^2 = 15.4
DEVIATION FROM INDIVIDUAL TREND LINE (GM/DAY)
MEASUREMENTS
σ^2 = 52.8
m−20 m−10 m m+10 m+20
DEVIATION FROM MEAN TREND LINE FOR SEX (GM/DAY)
Reliability = 1 − 15.4/52.8 = 71 per cent

Graph 1—Reliability of Total Protein Intake Observations Distribution of "Errors" of Measurement, and Distribution of Individual Measurements

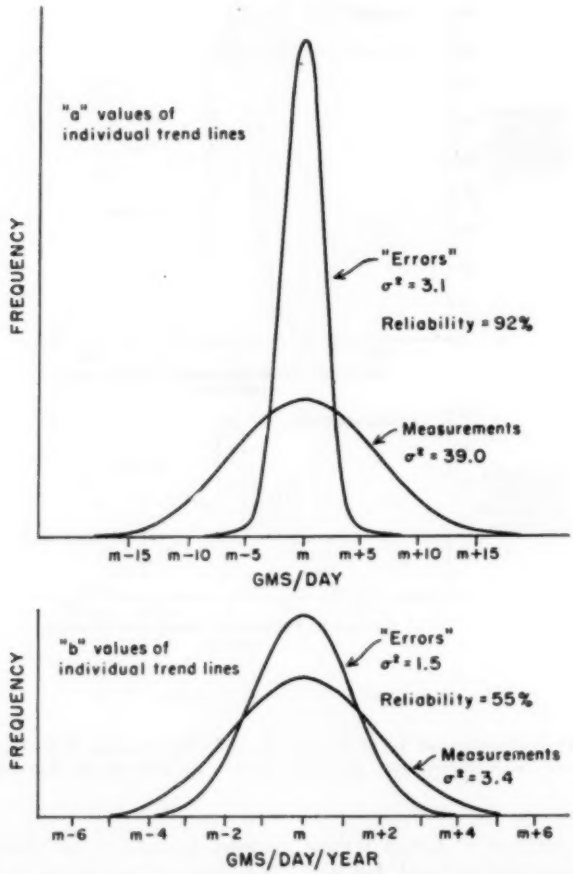
cated in the top part of Graph 1 there are 515 observations involved, but now instead of concentrating on the "error" in measurement each observation is shown in terms of the amount by which the particular individual's intake differed from the average intake observed among children of this sex and age.* The amount of difference between children, i.e., the spread of this distribution may be summarized by its standard deviation † which is 7.3 gm. per day.

If this standard deviation were no greater than the error standard deviation, we would be forced to say that the only differences we observed between individuals appeared to be the result of measurement errors. We are, of course, gratified to point out the fact that our children's intakes did differ from each other by more than the error of measurement.

The statistician sometimes likes to quantify this comparison in terms of the variances (standard deviations squared) of the distributions concerned. Thus, in this case the error variance is 15.4; the variance between individuals is 52.8; and we may say that 29 per cent of the observed differences between

* The age sex averages used were obtained from the sex-specific average trend lines.

† This standard deviation is also given as a universe estimate based on 511 degrees of freedom.



Graph 2—Reliability of Trend Line Constants for Total Protein Intake

individuals was the result of errors of measurement. Or putting it the other way around, the observations have a reliability of 71 per cent.

This figure describes the reliability of the individual annual observations of dietary intake. In studying the health and development of these children in the preschool years we are not only concerned with separate average yearly intakes, but also with the two derived trend line quantities mentioned earlier in connection with Cases 91 and 74, i.e., "a" the trend line value at three and one-half years and "b" the annual increase along the trend line. Graph 2 summarizes the facts pertaining to the reliability of these two determinations. Error distributions and individual difference distributions are sketched for both the "a" and "b" values and their reliabilities are given as 92 per cent and 55 per cent, respectively.

Thus, it appears that the dietary his-

tory technic enables us to determine the average levels "a" of protein intake between one and six years of age with a reliability approaching that found in anthropometric observations. On the other hand, the annual rate of increase "b" in protein intake during this age period appears to be a more subtle phenomenon which we have been able to observe with only fair reliability. However, the reliability of the dietary history measurements seem to justify their further treatment as scientifically meaningful data.

Determination of Validity

The question of reliability is only half the issue. Our instrument yields reproducible measurements—it measures something, but what does it measure? This is the question of validity or the ability of the instrument to measure the quantity it is designed to measure. The usual method for testing validity involves the taking of pairs of measurements, one by the instrument to be tested and one by an instrument of known or accepted validity. In our situation we have found it impossible to observe the diets of children at home over long periods of time by any of the generally accepted methods of quantitative analysis of dietary constituents. We can, therefore, examine the question of validity only indirectly.

Why, then, do we believe that it is actually protein intake that our instrument is measuring? In the first place, we believe this because of our experience with the operation of the instrument. When the nutritionist obtains statements from the mother concerning milk, meat, eggs, fish, etc., eaten by her child, we believe that these statements are actually related to the quantities of protein-rich foods eaten. When these statements are converted into grams of protein, we believe that the conversion factors used are actually related to the amount of protein in these foods.

It is, of course, perfectly possible that the statements of the mothers, or the conversion factors used, tend to exaggerate or to minimize the amount of protein consumed. For the purpose of comparing child with child, consistent biases of this type are unimportant and do not affect the validity of the instrument. Unfortunately, however, it is also possible that one mother exaggerates or minimizes more than another, or that the conversion factors err to a different degree for different foods and thus produce varying errors in different types of diet. Errors of this sort could reduce the validity of observations. If we oversimplify the situation greatly, we may state it like this: Our instrument measures something; we must decide whether that something is the child's protein intake or, for example, the mother's desire to make a good impression on the nutritionist.

At this point we observe that the measurements yielded by the dietary history show a correlation of 0.46 for girls and 0.68 for boys with the child's rate of growth of muscle in the lower leg. We believe that maternal bias in reporting diets is unlikely to be related to the child's muscular development. On the other hand, we believe that the protein content of the diet is quite likely to be associated with muscular development. Therefore, our current belief, which we cannot back up with rigorous proof, is that the instrument measures in general that which it is designed to measure—the average daily protein intake of the child. Our belief in this, however, must be subject to continuous re-examination as we continue to trace the interrelationships between the measurements of dietary intake and the health and development of these children.

Conclusions

We have followed a rather long and tortuous path through these data. It is fair to ask where it has led. Within the framework of the research project on which we are working we believe that we have achieved two major results.

In the first place we have clarified our own feelings as to the quality of the data we have collected. Before the statistical analysis was completed we estimated the limits within which the dietary interview could determine protein intake, and decided that the observations would not likely be in error by more than ± 10 gm. per day. Statistical analysis has confirmed this estimate and has removed the determination of reliability from the area of expert opinion to the area of measurable phenomena.

Second, and perhaps more importantly, we believe that it has been valuable to view a complex human interaction situation, such as the dietary interview, as a measuring instrument. We have found that it is possible to apply the same kind of scientific analysis to these interview data that we apply to the findings of physical measurements, x-ray observations, or laboratory determinations. The high levels of reliability we have found have encouraged us to continue in the joint analysis of interview, clinical, and laboratory data.

These conclusions apply, of course, to the dietary interview as it has been used in a particular study. The testing of one model of an instrument does not make it possible to guarantee the quality of another model, nor is reliability solely a function of the instrument. The quality of the results depends also upon the situation in which the instrument is used. Nevertheless, our experience leads us to believe that dietary interview technics are capable of producing measurements of high quality, and that it is worth while in any study using dietary interview methods to attempt to assess the quality of the measurements obtained.

Second World Congress of Cardiology to Meet in Washington

Physicians and research scientists from more than 40 countries will attend the Second World Congress of Cardiology, in Washington, D. C., September 12–17, meeting jointly with the 27th Scientific Sessions of the American Heart Association. This is said to be the largest and most important cardiovascular meeting ever held in the Western Hemisphere. The five-day scientific program in English, French, and Spanish will consist of symposia, panel discussions, and special lectures, including more than 250 papers during the formal scientific sessions. Exhibits demonstrating important aspects of cardiovascular research in the United States, commercial exhibits, and medical film showings, will be a part of the program. A series of medical sight-seeing tours to institutions of scientific interest in the Washington area have been planned, as well as tours to leading university centers and cardiac clinics of this country and Canada, following the congress.

The congress is being supported jointly by the American and the Washington, D. C., Heart Associations, the Lasker Foundation, and the National Heart Institute. The first World Congress of Cardiology was held in Paris in 1950. Application blanks and detailed information about registration fees, hotel accommodations, and features of the program from Dr. L. W. Gorham, Secretary-General, Second World Congress of Cardiology, 44 East 23rd St., New York 10, N. Y.

Early Ambulatory Treatment of Pulmonary Tuberculosis with Isoniazid

MERLE BUNDY, M.D., M.P.H.; GEORGE E. MARTIN, M.D.; I. HOPE ALEXANDER, M.D.; and CARL C. KUEHN, M.D., M.P.H.

Granted certain favorable home conditions, selected tuberculous patients can complete their treatment at home if medical, nursing, laboratory, rehabilitation and social services can be extended from the institution to the community. Advantages accrue to both the overcrowded hospital and the lucky patient.

How long is the waiting list? How soon can I get a patient into the hospital? It seems a shame to find tuberculosis cases reasonably early and then not be able to get them into the hospital until the disease has advanced so far that their chances of getting well are reduced. If they only knew the right people or had the right connections! When are we going to get more beds?

Familiar questions and reactions! We are sure they are familiar to you. That was our position in Pittsburgh in the early spring of 1952. There was a waiting list varying from 75 to 90 for our City Tuberculosis Hospital which was operating at its full capacity of 450 beds, while the League, Veterans Administration, and state hospitals also serving our area had waiting lists just as large—and added to this was the prospect of an avalanche of new cases from the metropolitan area x-ray survey scheduled to start in the spring of 1953. The average length of stay in the hospital had gradually increased to almost 13 months over the past several years. The available beds could not be turned over fast enough to meet the growing demand for hospitalization. This was further magnified by the drop in the usual turnover in beds by discharges against medical advice, as patients were staying in the hospital with the hope of being chosen for the isoniazid study. Our hospital had been selected for the Public Health Service cooperative study on isoniazid.[1] At one time a period of six weeks elapsed without an irregular discharge. The white male, many over 50 years of age, continued to account for almost 45 per cent of our admissions, and far advanced cases accounted for over 75 per cent.

Problems? We had many of them. Building new beds would take too long to answer the headaches of the forthcoming survey. Maybe the survey could be used to get the beds—a possible long-range solution. The other possibilities were to utilize the available beds to better advantage and to consider prehospitalization treatment. While searching for a solution, we began to see a faint glimmer of hope as the early results with isoniazid were noted. Pos-

The authors are on the staff of the Department of Public Health, Pittsburgh, Pa. Dr. Bundy is chief, Tuberculosis Control Division; Dr. Martin is medical director, City Tuberculosis Hospital; and Drs. Alexander and Kuehn are director and deputy director, respectively, of the Department.

This paper was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 13, 1953. This article is being simultaneously published in Spanish in the "Boletin" of the Pan American Sanitary Bureau.

sibly earlier discharge of the successfully treated patient would be feasible if the patients continued on isoniazid at home, since this was the only active treatment they were receiving in the hospital. In late June, 1952, this possibility was explored. A few patients had had a negative sputum culture for two consecutive months—our program of early discharge was on its way.

The decision to discharge patients early was usually made at a regular weekly conference attended by the medical, nursing, medical social, and x-ray department staffs of the hospital, the consultant staff of internists, phthisiologists, thoracic surgeons and pathologists, and members of the health department staff. In addition to the sputum status, the home conditions, the attitude of the patient to the "cure" of his disease, and the x-ray impression were considered. It is difficult to express the x-ray impression but, in general, considerable clearing was evident and the staff's opinion was that it probably would continue to regress. Some patients were occasionally held in the hospital longer because of the x-ray impression. A rather large number of patients were held considerably longer because of the requirements of the Public Health Service protocol.

While preparing the material for this presentation, it was decided to include a number of patients who had received streptomycin and para-aminosalicylic acid (PAS) and who were discharged with similar criteria. These cases are included not for comparison but to report our experience. No attempt will be made to go into the efficacy of various treatment regimes. Those used on the early discharge patients prior to and after discharge are indicated in Table 1.

From June, 1952, to May, 1953, the discharged patients returned each month to the hospital for a sputum examination and a comparison x-ray. Since

Table 1—Treatment Regime Used on 172 Early Discharges While in the Hospital,* and the Clinic

	Dose	Schedule
Isoniazid	3–10 mgm./kg. of body weight	Daily in divided doses
† Streptomycin	1 gm.	Twice a week for 12–24 months
Para-amino-salicylic acid (PAS)	5 gm.–10 gm.	Daily in divided doses

* Penicillin, aureomycin, or terramycin given for 7–10 days to patients admitted in toxic state.

† PAS always combined with streptomycin except for 10 patients on whom isoniazid was combined with streptomycin (latter included in isoniazid treated group).

May, 1953, the patients are reporting to a downtown clinic which the health department has established. The drugs are furnished to these patients by the health department through the clinic.

There were 315 live discharges and 75 deaths at our hospital from June 1, 1952, through March 31, 1953. Of these, 111 patients, or 35 per cent of those discharged alive, continued on isoniazid alone after discharge. An additional 61 patients, or 20 per cent of those discharged alive, received streptomycin. About one-half of the latter discharges continued on streptomycin and PAS from three to 18 months after discharge with the antibiotic being given at home or in the clinic. A public health nurse or some member of the family administers the streptomycin in the home. Thus 172, or 55 per cent, of our live discharges, left the hospital considerably sooner than would ordinarily have been expected.

Table 2 shows the age, sex, race, and distribution of the 172 discharges of whom 80 patients, or 72 per cent, were under 45 years of age in the isoniazid treated group. This same distribution is also noted in the streptomycin treated group.

Table 2—Age, Sex, and Race Distribution of 172 Early Discharges

Group A Isoniazid Rx	Total	White		Negro	
		Male	Female	Male	Female
All ages	111	43	27	26	15
Under 30	31	5	10	9	7
30–44	49	20	14	9	6
45–64	31	18	3	8	2
Group B Streptomycin Rx					
All ages	61	11	17	15	18
Under 30	24	2	10	5	7
30–44	21	4	4	5	8
45–64	13	5	..	5	3
65 and over	3	..	3	..	..

Although the white male accounts for almost 45 per cent of our admissions, only 32 per cent of our early discharges were white males. This latter fact is due, we believe, to the fact that a great many white males are over 50 years of age on admission and we cannot expect as good a chance of improvement.[2]

Table 3 shows the treatment of the patients prior to the initiation of isoniazid therapy. Twenty-two patients have had one or more previous hospitalizations; 89 were in their first admission.

Table 3—Hospitalization and Treatment Record Prior to Use of Isoniazid in 111 Early Discharges—Group A

		Number
Hospitalization Record		
a. Previous hospitalization		22
b. No previous hospitalization		89
Total		111
Treatment record		
a. No previous treatment		23
1. Isoniazid alone	13	
2. Isoniazid and streptomycin	10	
b. Previous treatment—Placed on isoniazid alone		88
1. Streptomycin and PAS	59	
2. Streptomycin, PAS, and major surgery	18	
3. Streptomycin, PAS, and minor surgery	11	
Total		111

For 23 patients no previous therapy had been given. Thus, the majority had received previous therapy. As noted, all of the previously treated patients had received streptomycin—with most of the patients receiving over 50 gm. of the antibiotic—but were considered failures since the sputum remained positive. In 27 patients, however, the sputum culture was reported later as being negative during the month isoniazid was started. The major surgical procedures include 13 thoracoplasties, three pneumonectomies, and two lobectomies. The minor surgery includes seven with pneumothorax, three with pneumoperitoneum, and one patient who had received both procedures.

The admission portion of Table 4 shows that the greatest proportion of the cases under discussion were in the far advanced category in both Groups A and B.

The discharge section shows a considerable shift to the lesser extent of disease at discharge. This was most marked

Table 4—Stage at Admission and Discharge of 172 Early Discharges

Stage	Group A Isoniazid Rx	Group B Streptomycin Rx
Admission—Total	111	61
Minimal	4	4
Moderately advanced	23	17
Far advanced	84	40
Discharge—Total	111	61
Minimal	27	30
Moderately advanced	30	12
Far advanced	54	19

in Group B. Table 5 is a combination of the two sections of Table 4. Over one-half of the moderately advanced in each group shifted to minimal on discharge.

In Group A, there were two moderately advanced cases which shifted to far advanced before stabilizing; none of Group B made this change. It must be remembered that the majority of patients in Group A already had had previous streptomycin treatment.

How successful have we been? We think the record is impressive. Table 6 indicates the length of stay in the hospital by stage of disease on admission of the patients in both groups. Despite the fact that the isoniazid treated patients (Group A) had already received on the average of over 50 gm. of streptomycin and were considered as streptomycin failures, 38, or 36 per cent, were discharged within eight months and 58, or 52 per cent, within 11 months. As noted, a great many of Group A had far advanced disease and had been in the hospital one or more years even before isoniazid was available.

It is encouraging to see as high a percentage as we had within eight months. In Group B, 31, or 50 per cent, were discharged within eight months, and 41, or 67 per cent, discharged within 11 months. This indicates that when the patients respond to chemotherapy a favorable response in 50 per cent of instances may be expected in from six to eight months or sooner. Healing, we believe, takes place more by resolution with a minimum of fibrosis. This same experience has been noted in patients subsequently treated with isoniazid to which we will refer later.

Table 7 shows the length of time these patients have been out of the hospital. In Group A one will notice that all 111 patients remain out of the hospital. There were, however, three pa-

Table 5—Stage at Admission Versus Stage at Discharge of 172 Early Discharges

Stage at Admission		Stage at Discharge		
		Minimal	Moderately Advanced	Far Advanced
Group A—Isoniazid Rx—Total	111	27	30	54
Minimal	4	4	..	..
Moderately advanced	23	12	9	2
Far advanced	84	11	21	52
Group B—Streptomycin Rx—Total	61	30	12	19
Minimal	4	4	..	..
Moderately advanced	17	13	4	..
Far advanced	40	13	8	19

Table 6—Length of Hospitalization by Stage on Admission and Group of 172 Early Discharges

Length of Stay in Months	Group A Isoniazid Rx				Group B Streptomycin Rx			
	Total	Minimal	Moderately Advanced	Far Advanced	Total	Minimal	Moderately Advanced	Far Advanced
Total	111	4	23	84	61	4	17	40
Less than 3	6	2	1	3	4	1	2	1
3– 5	17	..	8	9	5	1	4	..
6– 8	15	1	4	10	22	2	6	14
9–11	20	1	4	15	10	..	1	9
12–14	13	..	1	12	10	..	3	7
15–17	10	..	1	9	2	..	..	2
18–20	5	..	1	4	..	..	..	..
21–23	7	..	..	7	3	..	..	3
24–29	8	..	..	8	4	..	1	3
30–35	2	..	1	1	1	..	..	1
36 and over	8	..	2	6	..	..	..	..

tients whom we consider as failures; two patients were readmitted to the hospital, one with the "flu," who had a positive sputum that subsequently converted on the same regime and was discharged three months after his readmission; the other fell down the basement steps at home, had a pulmonary hemorrhage, and was readmitted. His sputum subsequently became positive. This patient finally converted to a negative sputum again (viomycin and streptomycin were added) and he was discharged six months after the readmission. The third patient failure has not yet been readmitted. The x-ray has shown a spread and her sputum is occasionally positive. Domestic trouble has arisen in the past few months and it is doubtful if she has actually taken as much rest as was ordered. Thus, three patients in Group A, or slightly less than 3 per cent, can be considered failures in this group even though two of the patients are again on clinic patient status.

In Group B, 57 patients, or 93 per cent, remain on a clinic patient status. One of the four failures, a 75-year-old white female, is so classified but actually should not be so. She was readmitted after a positive culture was obtained while she was staying at a convalescent home. All subsequent cultures in the hospital had been negative. She has not been discharged because she has no home and refuses to go to the county home. Three additional failures have been readmitted; one very recently after being out over one year. The sputum of these three remain positive at this writing. Thus, four patients, or 7 per cent, can be considered failures in Group B.

Of the 172 originally discharged, seven (three Group A and four Group

Table 7—Length of Follow-up by Group of 168 Early Discharges *

Months Since Discharge	Group A Isoniazid Rx	Group B * Streptomycin Rx
7	20	3
8–11	29	5
12–13	36	17
14–15	16	8
16–17	10	24

* Four failures of 61 early discharges are excluded, as these patients are in the hospital at present time

B) required rehospitalization in the 17-month follow-up period. This is a failure rate of 4 per cent in the 17-month period. This compares remarkably with our average readmission rate to the hospital of about 32 per cent of our admissions in any one year.

A word should be said about results of sputum examinations. All specimens are cultured. During the winter months an occasional positive culture may occur. Fifteen positive cultures were obtained from 10 patients but subsequent cultures remained negative. Unless x-ray or clinical evidence substantiates a positive sputum culture, we wait for the third positive before readmission as a failure. We are not too much concerned with the rare positive; it is the consistent positive culture that requires the readmission.

Toxic manifestations of both isoniazid and streptomycin in the doses used are remarkable because of their absence. Our experience indicates this to be a safe procedure.

Discussion

Possibly the title of this paper should be "Early Discharge" instead of "Early Ambulatory" treatment with isoniazid. However, we believe that it is inevitable that a reduced amount of rest will be taken by patients sent home than if they were to remain in the hospital. The indoctrination of the patient in the hospital will offset to some extent any unfavorable effect of reducing the amount of rest. It must be remembered that from a public health standpoint the hospital is first an area of isolation and second one of treatment. Prolonged use of a bed in the hospital with subsequent increase in the waiting list actually counteracts the good coming from keeping a patient for an extended period prior to discharge. More rapid turnover without detriment to the patient increases the effectiveness of the hospital in tuberculosis control.

After embarking on this program we were encouraged by an editorial by Long [3] calling attention to the problem of prolonged chemotherapy in the hospital and raising the question of continuing such treatment at home under the careful observation of the private physician. D'Esopo [4] raises a similar question in calling attention to the effect of prolonged chemotherapy. Parran [5] in an address at the celebration of the 50th anniversary of the Henry Phipps Institute in Philadelphia suggested we search endlessly for new facts and new approaches in tuberculosis control.

The practice reported by us has abolished our waiting list and produced a surplus of beds varying from 40 to 60 at any one time. This level was reached at the end of March, 1953. It was a gradual process over a 10-month period, reinforced constantly by the fact that the patients so cautiously discharged were not being readmitted to the hospital as failures with the exception of those mentioned. During the succeeding six months there were 253 live discharges, an average of 11 more discharges per month than in the preceding 10-month period reported in this presentation.

It is our impression that the period of hospitalization has been reduced in the neighborhood of 50 per cent in those instances where favorable response of the patient is noted. Even though we now have empty beds and the need for early discharge is not as pressing, we intend to continue because of the favorable impression we have of this procedure. Our clinic load has increased tremendously. From our present knowledge it is presumed that those discharged on isoniazid in the future will be on PAS as well (see Table 1 for dose).

Space does not permit going into the

mechanics of the clinic. We are rather proud of this new setup because of the utilization of the clinic physicians' time. All patients are seen by appointment from seven to 10 days after being interviewed by a public health nurse for an interval history; a comparison x-ray is taken, bottles for sputum examinations furnished, and specimens for other laboratory work requested are obtained. Thus, the clinician has all the necessary data for a clinical evaluation when the patient is seen. This close supervision following discharge, we believe, holds the key to the apparent success we have had. The psychological "lift" of being discharged from the hospital early and the change from the institutional atmosphere to the favorable home environment contribute as much. Very few delinquencies occur. The patient appreciates the care received and continues to hold in great respect the indoctrination received at the hospital.

We are the first to admit that continued observation is necessary for the evaluation of this type of early ambulatory or early discharge treatment. As mentioned previously, these patients are still maintained on the drug after 17 months as clinic patients. Consideration must be given soon to stopping the drug. It is presumed that after two years of therapy (sometime after April, 1954) careful selection will be made as we discontinue the drugs in some of the patients. We do not know what will happen after two years of isoniazid therapy. Likewise, we are not sure where surgical procedures fit into this picture.

Earlier, we spoke of another alternative—prehospitalization therapy. In a few instances with new untreated cases this procedure has been tried with isoniazid in 5 mgm./kg. of body weight per day in divided doses and 5 gm.–10 gm. PAS daily in divided doses. This has also been used in instances of patients who have previously been treated and out of the hospital for a long period of time. Sufficient success has been had for us to state that were the need great enough, we would embark upon such a program. With the "elbow room" enjoyed with 40–60 empty beds, we do not feel justified in the wholesale undertaking of such a procedure. We agree with Stocklen,[6] who has had a similar experience, that the prehospitalization treatment might be considered when tuberculosis hospital beds are not available. Originally it was our intention to institute such a procedure. We have, however, put it on the shelf, temporarily, but within reach to use when necessary.

Summary

The need for the better utilization of the available tuberculosis hospital beds necessitated drastic action. A program of early ambulatory treatment or early discharge was instituted. In the 10 months from June 1, 1952, to March 31, 1953, 172 patients with negative sputum cultures for at least two consecutive months, with x-ray improvement, and a favorable outlook were discharged. One hundred and eleven patients, or 35 per cent of the live discharges during that period, were continued on isoniazid after discharge from the hospital. There were three failures, or less than 3 per cent reported in this period, with two of the patients successfully retreated and the third yet to be tried on readmission. Sixty-one patients, or 20 per cent of the live discharges during the period, had been treated or were continued on streptomycin and PAS. There were four failures, or 7 per cent, in this group. One patient should not be classified a true failure. Three streptomycin failures continued a positive sputum. These failure rates contrast markedly with the average of a 32 per cent readmission rate to the hospital in any one year.

The strict follow-up of these patients

is the key to the apparent success of this procedure. The psychological "lift" of being discharged from the hospital early and the change from the institutional atmosphere to the favorable home environment contribute as much.

This is a safe procedure, toxicity being extremely low, so the procedure is being continued and 40–60 empty beds are now available to residents of our community.

Continued follow-up is necessary for the ultimate evaluation of this procedure.

REFERENCES

1. Mount, Frank W., and Ferebee, Shirley H. Control Study of Comparative Efficacy of Isoniazid, Streptomycin-Isoniazid, and Streptomycin-Para-aminosalicylic Acid in Pulmonary Tuberculosis Therapy. I. Report on Twelve Week Observations on 526 Patients. Am. Rev. Tuberc. 66:632 (Nov.), 1952.
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6. Stocklen, J. B. The Unhospitalized Tuberculosis Patient—Available Data Bearing on These Problems. Ann. Meet. Nat. Tuberc. A. Los Angeles, Calif., May 22, 1953.

Discussion

JOSEPH B. STOCKLEN, M.D., F.A.P.H.A.

The problem of providing adequate treatment for patients with active pulmonary tuberculosis in regions where sufficient tuberculosis hospital beds are not available is widespread in this country, though in some areas sufficient beds are now available to care for all known cases of active tuberculosis. Adequate treatment for the tuberculous where insufficient hospital beds exist has been attempted in several ways:

1. Provision of adequate numbers of tuberculosis hospital beds—a long, costly, and not infrequently impossible procedure—is at present recognized as the best solution to the problem from a purely medical standpoint.

2. Treatment of patients with active disease on an outpatient basis with collapse therapy and with antimicrobials. We have firsthand experience with this method—in the individually selected case it gives good results. In Cuyahoga County, Ohio, in a series of 163 consecutive patients in whom treatment was started in the outpatient department—during the period from January 3, 1952, to September 30, 1952—57 per cent improved and 41 per cent did not require hospitalization. However, from a tuberculosis control standpoint, results were not nearly so striking. In the same period of time noted previously, hospitalization was recommended for 871 patients in Cuyahoga County, only 7.6 per cent of whom did not require admission to the hospital. Thus, such treatment made very little impact on the hospital bed requirements.

3. Early discharge of patients from the tuberculosis hospital. This is the type of program reported by the Pittsburgh group. It appears to have been successful in at least one respect: the waiting list was abolished. It is also probable that the number of persons in the general population who are producing tubercle bacilli has been reduced. It is important to note that these two statements are absolutely true only on a

short-term basis. However, further study may show them to apply on a long-term basis.

We have had the opportunity to review the chest x-rays of some of the patients reported in the Pittsburgh study and were very much impressed by the excellence of results. In a few patients, with rather definite radiological evidence of cavities but with negative sputum cultures over a period of months, we could not agree that the result was good, even though it is our impression that it was recorded as such. We believe that all tuberculous patients should be hospitalized until the so-called target point has been reached. That is, until the disease is radiologically stable, until there is no radiological evidence of cavity and until the sputum is negative by criteria offered in the last edition of Diagnostic Standards. The last of these conditions seems to have been satisfied in the Pittsburgh study: it is not clear that the first two have been satisfied universally.

The inherent danger in the outpatient treatment of tuberculous patients who do not satisfy all the criteria for arrest or inactivity as enunciated in Diagnostic Standards is that we may produce a large group of patients with chronic tuberculosis whose tubercle bacilli are resistant to all the known antimicrobials. If such resistance is a stable characteristic of all succeeding generations of tubercle bacilli, the situation would be, indeed, serious.

It must be recognized that the role of prolonged rest in the treatment of pulmonary tuberculosis has never been carefully evaluated. It is our opinion that no program of outpatient therapy of tuberculosis will provide any valid evidence to support or condemn the value of rest in treating tuberculosis. However, as an expedient in solving a very serious problem, the Pittsburgh group is to be congratulated for a courageous attack which thus far shows every evidence of being successful. This group is also to be commended for carefully documenting, analyzing, and reporting the results of this experience. It is to be hoped that the follow-up of this group of patients will be continued and that another report may be made on the five-year results.

In the meantime, regions which have sufficient hospital beds should rely on bed rest as in the past. Those regions which do not have an adequate number of beds should be encouraged to consider a program such as the Pittsburgh group has used. The treatment of the tuberculous before hospitalization should not be neglected. If a program for use of the antimicrobials for tuberculosis is contemplated by any group it should be begun with caution and with the attention to analysis of results that is so outstanding in the Pittsburgh program.

Dr. Stocklen is controller of tuberculosis, Cleveland and Cuyahoga County, Cleveland, Ohio.

This paper is a discussion of the previous article by Dr. Bundy and was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 13, 1953.

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Dr. Stocklen is controller of tuberculosis, Cleveland and Cuyahoga County, Cleveland, Ohio.

This paper is a discussion of the previous article by Dr. Bundy and was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 13, 1953.

Discussion

JULIUS WILSON, M.D.

Dr. Bundy and the group in Pittsburgh have solved their problem boldly and have demonstrated one way to secure enough hospital beds for tuberculosis. We have had a similar problem in Philadelphia, but we have neither the authority nor possibly the nerve to clear hospital beds.

The first effect of the introduction of drug treatment on pulmonary tuberculosis has been the prolongation of the average hospital stay. For example, the Philadelphia General Hospital has increased the average stay of tuberculosis patients from 75 days to 252 days, the number of discharges per year has been reduced from 1,044 in 1937 to 475 in 1952. This has been due primarily to the marked fall in the death rate (from 44 per cent of the discharges to 15 per cent of discharges) with very little decrease in the irregular discharge rate (from 29 per cent to 27 per cent). The resulting prolongation of the waiting list, especially for males, to as long as a year and a half has been disastrous to the patients with acute lesions. Over 60 per cent of the patients waiting have been Negroes. Our program of outpatient treatment was begun in the spring of 1951 primarily to treat patients awaiting admission to the hospital or sanatorium.

Our experience has shown that the progress of pulmonary tuberculosis can be checked and life can be prolonged by treatment at home with streptomycin, PAS, or with isoniazid in combination with either. The longer the treatment is continued, up to a year, the better the results. However, the longer the treatment, the higher the percentage of cases with persistently positive sputum which show organisms highly resistant to the drugs, and the more relapses occurring under treatment. Persisting cavities result in resistant organisms in most cases. Forty per cent of our patients with persistently positive sputum showed organisms resistant to medication after treatment of from nine months to one year.

Resistance to INH has been arising rapidly and regularly even when the drug is given in combination with streptomycin and PAS. Moreover, we were able to produce tuberculosis in guinea pigs with the first five cultures or organisms resistant to INH and we believe that such organisms are still virulent. We have not been convinced of the harmlessness of ambulatory treatment with drugs nor that the immediate good results will hold up over a longer period of time. We feel that the treatment before hospitalization is unsatisfactory because it does not provide rest treatment or patient education. Beds must be cleared so that every patient can be admitted to the hospital immediately after the diagnosis of tuberculosis is made for institution of treatment, rest, and indoctrination.

We are in full agreement with the authors of the paper over the safety of ambulant treatment. Only 1–2 per cent of cases show any toxic reaction and these are usually allergic and easily controlled. However, I do question the wisdom of allowing the patient or members of the patient's family to administer intramuscular injections. We have our public health nurses give the injections twice a week in the home whenever the patient is too ill to come in for treatment. I am surprised there has not been more attrition of the case load, because we have a considerable per-

centage of patients dropping out of treatment before it is completed. It is not clear how many of the Pittsburgh patients under outpatient treatment have persistently open cavities. I would gather that many do have such cavities and therefore the long-term results will be poor. Collapse therapy and surgical treatment properly supplementing rest and the use of antimicrobial combinations will get more durable results as part of an integrated plan of treatment.

Finally, I want to point out that the cooperation of the hospital superintendent or the medical director of the sanatorium is necessary to put such a plan into operation. He does not consider his institution to be "first a place for isolation and only secondly a place for treatment." Therefore, he must be convinced of the necessity for earlier discharge of patients and that will not be easy. I want to thank Dr. Bundy and his colleagues for the opportunity of discussing their very stimulating paper.

Dr. Wilson is director of clinics, Henry Phipps Institute, University of Pennsylvania, Philadelphia, Pa.

This paper is a discussion of the paper by Dr. Bundy and was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 13, 1953.

Rheumatic Fever Institute

La Rabida Sanitarium announces that its annual institute on rheumatic fever will be held at the sanitarium in Chicago on October 11–15, 1954. It will be directed primarily to the general practitioner or family physician and to nurses, medical social workers, occupational therapists, dentists, and others with a similar interest in the subject.

Advance registration is required for those who wish to attend the entire five-day session. Attendance is open to all the above and is limited only by the size of the building. Visitors to individual sessions will be admitted by card on previous application.

Further information from Institute, La Rabida Sanitarium, East 65th St., and South Shore Drive, Chicago 49, Ill.

Mental Health in a City Health Department

BENJAMIN JEFFRIES, M.D., and MARY BURKE, R.N.

If you were involved in the inauguration of a mental hygiene program for your health department how would you begin the plan? With a pilot research study? Or a direct clinic service? Or field consultation with the staff? Or indoctrination of all the staff in the matter of applicable mental health concepts? In the experience reported the last method was the one chosen.

Mental illness is our number one health problem. In this country, today, 1,000,000 hospital beds are needed for persons who suffer from a major psychiatric disorder. Michigan will spend $43,000,000 this year, and this amount refers only to the expenditure for the care of mentally ill hospitalized patients and the cost of the state-supported guidance clinics. Despite the tremendous cost in Michigan, as in other states, the service is inadequate. Michigan's Correction Commission has only two psychiatrists for its entire prison population of approximately 18,000 (inmate, paroled, and parole violators). All over the country waiting lists for hospitalization and admission to psychiatric clinics continue to grow. Present-day treatment facilities are not preventing the spread of mental illness.

Recognizing this, our Health Commissioner, Joseph G. Molner, M.D., has provided and has continued to support a preventive mental health program rather than to expand the department's treatment facilities. We believe a mental health division in a city health department should operate in a consulting and coordinating capacity, initiating and directing mental health projects with the various divisions. It is upon this concept that we are developing our program. Exhibit A shows diagrammatically how our Mental Health Division functions within the Detroit Department of Health.

Before describing some of the methods we have used, it may be helpful to know something about the history of our program which has made our present activities possible. As early as 1916, under the direction of Henry F. Vaughan, Dr.Ph., and Grace Ross, R.N., mental hygiene was initiated in the staff education of public health nurses. Through the succeeding years, a portion of staff education time has been devoted to it. During these years, most of the nurses who joined the staff had the benefit of a conference with a psychiatrist as a part of their employment examination. Miss Ross, the former

Exhibit A

MENTAL HEALTH INTEGRATION WITH OTHER HEALTH PROGRAMS WITHIN THE DETROIT DEPARTMENT OF HEALTH

director of the Public Health Nursing Division, initiated the Civil Service program of experimenting with the Rorschach in the battery of tests used to determine suitability for service and for the purpose of finding an objective measure of potential leadership. Throughout the years psychiatrists generously shared their time and experiences in staff programs of the Nursing Division. The report by Ivan C. Berlien, M.D., of his experience with the department was given at the American Public Health Association meeting in 1949, and appears in the February, 1950, issue of the American Journal of Public Health. Due chiefly to the efforts of these outstanding people, the supervisory staff has long recognized the need of an active mental health program.

When the present unit was created in 1950, I was appointed mental health consultant. With me are a mental health nursing consultant and a secretary. We have office space in one of the department's newer, and for us one of the most desirable, regional health centers because it provides a comfortable environment and sufficient space to carry on our program.

Objectives—To achieve our goal, which is to reduce the incidence of mental illness in Detroit, we have evolved the following three objectives: To familiarize all the department's staff with mental health principles; to orient all staff members working directly with patients to mental health concepts and technics; and to promote realistic interpersonal relationships and interdisciplinary functioning so the "team concept" will work to provide better community service and personal satisfaction.

Principles—In developing the program we have, in general, been guided by these principles:

1. Success is dependent on the method used to introduce the program to the staff.

2. The mental health project should be integrated within the various departmental bureaus and divisions. (It should in each instance be initiated by the special service and planned always in relation to the individual service's needs. Tact and consideration in fostering motivation are essential. In this approach the Mental Health Division operates in a consulting and coordinating capacity to make best use of limited personnel.)

3. Employees at all levels should be motivated to be active in the planning stage of the projects in which they participate. (There is a definite advantage in initiating a program at the supervisory level, for when supervisors have helped in the planning they are more willing to share responsibility and support the program.)

4. Planning groups should be small enough to encourage active participation.

5. Program strengths and weaknesses should be determined by frequent evaluations, both written and oral.

6. The resources represented by individuals and interested community groups should be utilized both in the planning and in the promotion of the program. (This last principle is by no means the least in order of importance. We were surprised and pleased to learn of the availability of experts in our community and the many community groups, such as universities, state health authorities, private agencies, and industry who were willing to help.)

Procedures—As you can realize, our procedures have been modified from project to project. The changes are brought about largely from the participants' evaluations. The program was started in the Public Health Nursing Division. It was sponsored jointly by the commissioner of health, the medical director, and the director of the Division of Nursing. First, the nursing supervisors were given an intensive orientation of five, two-hour sessions in basic

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Dr. Jeffries is mental health psychiatrist-consultant, and Miss Burke is mental health nurse-consultant, City Department of Health, Detroit, Mich.

This paper was presented before a Joint Session of the American School Health Association and the Health Officers, Maternal and Child Health, Public Health Education, and Public Health Nursing Sections of the American Public Health Association at the Eighty-first Annual Meeting in New York, N. Y., November 12, 1953.

personality development by the consulting psychiatrist. Then, the remainder of the nursing staff received the same orientation. Similar sessions have been held semiannually to orient the new nurses coming to the staff. Almost without exception young nurses who now come to the staff have had the three-month psychiatric nursing experience required today in all schools of nursing. For this reason we are planning a different type of orientation for our present group of new nurses.

Health Center Conferences—The next project was the initiation of planned conferences in the health centers, now a regular service of our division. These health center sessions are attended by staff nurses, supervisors, and often by representatives of community agencies interested in the particular problems being discussed. Material for the conference is selected by the center supervisor from the staff nurses' work with families in the district. These are usually typical situations encountered by the nurses every day.

Child Growth and Development Workshops—In 1951 we extended our program to place greater emphasis on the emotional aspects of maternal and child health. Following our established method of integration, four divisions—Maternal and Child Health, Nutrition, Nursing, and Mental Health—planned and sponsored a program for demonstration in this area. Its purpose was to evolve a staff education program for Department of Health nurses which would add to their knowledge of the mental health of infants in relation to their environment and also help the nurses to use this knowledge in their home visits and clinic conferences.

Twenty nurses selected from the seven health centers participated. The child health conference in one of the centers was used as a laboratory, and the group was divided into five sections of four nurses each for observation in the clinic and for participation in a postclinic discussion period. Each nurse selected a mother-baby couple whom she followed through the clinic. After the conference the small group met and discussed their observations. Exhibit B was the guide

Exhibit B

WELL BABY CLINIC: SPECIFIC OBSERVATION OF MOTHER-CHILD COUPLE

Please select a mother-baby couple—a couple which arrives early, preferably one which elicits your special interest. If possible, follow this same couple through the clinic. The following are suggested ways in which to focus your observations. However, do not feel limited by them.

Selected Couple:
Family name:
Child's name:
Child's chronological age:
Child's place in family:
Other family members present:
Others in household:

Note situation (weighing, physical exam., etc.) and give personal interaction stimulus in items 1 through 6.

Observation	Situation and Stimulus
1. Observe interaction of child and mother.	
(a) Behavior evidencing mother's attitude toward child.	
(b) Behavior evidencing child's attitude toward mother.	
2. Observe interaction of child and nurse.	
3. Observe interaction of child and doctor.	
4. Observe interaction of child and clinic assistant.	
5. Observe interaction, if any, of child with other children.	
6. Observe interaction of mother and staff.	
7. In summary cite examples of developmental behavior motor, vocal, social, emotional, problem solving, etc.	

used by the nurses in making their observations. They were not, however, limited to the areas on this guide. Exhibit C is a sample of the general observation evaluation form which the participants were asked to complete. Exhibit D is a summary evaluation form.

Exhibit C

WELL BABY CLINIC: GENERAL OBSERVATION

In the clinic situations 1 through 8 listed below:

A. What were some of the things being done to meet the emotional needs of mothers and children seen today?
B. Are there other suggestions which you would make if more equipment, more staff, etc., could be made available?
C. Do you have any suggestions to offer the staff as to how they might more effectively and efficiently use facilities and time now available?

1. Waiting room
2. Admittance desk
3. Weighing
4. Temperature taking
5. Conference room
6. Group talk
7. Physical examination
8. Other clinic situations

Exhibit D

WORKSHOP IN PARENT-CHILD RELATIONSHIPS

What Are Your Impressions of the Following:

A. Favorable reactions with reasons
B. Unfavorable reactions with reasons
C. Other

Subject
1. Orientation
2. Clinic observation
3. Postclinic session
4. Discussional
5. Your over-all impression of the entire workshop
6. Would you like a similar workshop sometime in the future?
   (a) When?
   (b) What?
7. What methods do you suggest for presenting this program to other health center groups?
8. Comment on presentation
   (a) Size of group
   (b) Length of time
   (c) Material
   (d) Place
   (e) Number of session
   (f) Composition of group
   (g) Tape recording
   (h) Other

During the pilot project each nurse received 20 hours of experience which were divided into 10, two-hour periods. It included an orientation session, two periods of observation in the clinic with a postclinic discussion, and seven sessions attended by the large group of 20. These sessions were planned to observe mothers with their babies or preschool children in five age groups: 6 weeks to 5 months, 6–8 months, 9–11 months, 12–15 months, and 16–24 months. The mother-baby couples were invited to participate by the workshop members who had previously been attracted to them during their conference observation. At the two final sessions mothers also participated with the nurses in a discussion of the following topics: preparation for labor and delivery, natural childbirth, breast feeding, bottle feeding, pacifiers, and "rooming in."

Because the written evaluations of the participants indicated that a majority felt the pilot project was worth while, five similar workshops have been held subsequently in the various health centers. The demonstration technic and the time allowed have been individualized to meet the needs of each group. The participants in the workshops have been center nurses, doctors, nutritionists, and some of the other clinic personnel. We plan to continue this method, varying it with the needs of the group.

As we observe the social facts in the lives of our clients—their housing, economic status, marital status, cultural background—we tend to examine and modify our own attitudes toward parents and children. Phenomena routinely presented to the nurses in the

home, clinic, and school become more meaningful. Also, the staff becomes more sensitive to the needs of parents and children and are able to be more helpful to them.

We believe such preparation in the area of maternal and child health makes nurses more secure themselves and better able to share with parents present scientific knowledge in this field.

Workshops for Supervisors—Workshops for new supervising nurses and nursing administrators and consultants have also been organized and directed by the Mental Health Division. These workshops, as with all our projects, have been the result of discussion with the mental health consultants who, beginning with a tentative plan, have worked out the projects with the participants. The basic topics have been related to the dynamics of individual behavior and motivation with emphasis on the problems of supervision. The technic has been that of group discussion centered about a resource person or group leader. In each instance there were five, two-hour sessions at weekly intervals. We have not hesitated to go afield for resource people, including clinical psychiatrists, budget administrators, business administrators, and personnel people. In one of our group projects we invited the top administrator of other divisions of the department to set up the opportunity of increasing mutual understanding of common problems. The give-and-take has been refreshing and rewarding. These administrators also have been gratified to be able to express themselves informally in the group on their own problems, as well as policies relating to the Nursing Division and to supervision.

Health Education and Social Hygiene Projects—The Mental Health Unit in its work with other divisions has had a number of short-range projects consisting simply of consultation on the mental health aspects of proposed divisional projects or participation in their planning. We have worked with the Health Education Division in the presentation of the American Theater Wing Mental Health Plays—"Scattered Showers," "Fresh Variable Winds," and "And You Never Know." In this instance we extended our service beyond the education of the staff by participating in this division's program of community mental health education. Under the supervision of this division, the plays were presented by several health guild groups. These groups, organized many years ago by the Health Education Division, now total 5,500 women who are available as volunteer Health Department workers. Each of the six guilds has a continuous health program under the guidance of the Health Education Division.[1] Our task was to help in the group discussion of the plays and assist the health education group leaders in presenting them.

We have at selected times participated in the group discussions of the Social Hygiene Division as a part of the program of training venereal disease investigators. Our assignment has been to interpret and discuss the material derived from interviews with patients. Also, we have given some consideration to the problems of sexuality and the emotional aspects of promiscuity and the repetition of venereal disease in certain groups of patients.

Hospital Participation Plan—In 1952 we were invited by the medical director of the Herman Kiefer Hospital, one of the department's institutions, to participate in planning a mental health program. After a couple of planning sessions, it was evident that the program contemplated would necessitate a three-to-five-year project. A steering committee drawn from key hospital personnel has provided the leadership for this venture. Consultants from various community groups also have given generous assistance. The goal of this

project is to control emotional illness and improve the mental health of the hospital's 1,100 patients. Much of the early effort will consist of a study of the emotional climate of the hospital and the orientation of the key personnel in basic mental health principles. The present program has three parts.

Mental health education seminars for all staff members is the first. These are conducted in heterogeneous groups of approximately 15–20 persons. A typical group includes: a business administrator, a chaplain, a dietitian, three doctors, a laboratory worker, a maintenance worker, five nurses, an occupational therapist, and a practical nurse. We spend from four to five hours with each group, pointing up the emotional aspects of patient care. We have started with the supervisors of the various departments and will ultimately proceed to all staff personnel.

The second part consists of ward conferences. These provide a means of sharing the knowledge, experiences, and feelings of the staff members from the various disciplines in relation to the patient presented. The mental health consultant has the opportunity not only to provide clinical consultation for an individual patient, but also to demonstrate clinically the emotional aspects of patient care.

Research and evaluation complete the program. This phase of work is under the direction of a committee that currently makes surveys and studies the various aspects of the entire project. These include the attitudes of patients and personnel. Evaluation of procedures and communication in the hospital will be attempted. At the end of the first year we feel that we are really only in the pilot phase of this program.

Interviews—In addition to these projects carried on jointly by the psychiatrist-mental health consultant and the mental health consultant-nurse, the latter has the routine duty of interviewing the public health nurses joining or leaving the department. On the basis of her material, nursing administrators and supervisors are aided in dealing with problems of recruitment and retention of staff. Similarly, the psychiatrist is available for individual consultation with the staff of the department. This is not a large service since we are fortunate in having a well trained supervisory staff able to handle the vast majority of problems. They are given confidence by the ready support of the consultation service of the Mental Health Division.

Conclusion

We continue to build slowly our program because it is difficult for the staff to accept the intangibles of a mental health program. This is one of the primary reasons for our emphasis on maximum staff participation in all phases of our projects. One of the major problems is demonstrating in concrete terms the results of our work, since paper and pencil evaluations do not adequately convey feelings. In addition, the practice of mental health principles and the resulting change in attitudes in the divisions of a department of health are subtle and not immediately detectable.

Our evaluations and impressions indicate great interest and enthusiasm on the part of the staff in participating, obtaining, and refreshing themselves in the principles of mental health. It is very difficult, because of realistic limitations of time and personnel, to meet completely the needs of the staff in their public health work. However, there is evidence—in the nursing records—of attention given to the feeling tones in the nurses' work with families.

The Mental Health Division of the Detroit Department of Health is the result of the combined efforts of many who have gone before us, our present

colleagues within the department, and individuals and community groups outside the department. As of this day we feel that we have just embarked on our mental health program to reduce the incidence of mental illness in Detroit. We welcome opportunities for communication with other health departments in extending our own mutual projects.

ACKNOWLEDGMENTS—In our recent developments we have received considerable assistance from many individuals outside our own department and especially from Helene Buker, chief, Public Health Nursing Section, Michigan Department of Health; Katharine Faville, dean, College of Nursing, Wayne University; Richard L. Lea, executive secretary, Tuberculosis and Health Society of Wayne County; H. A. Lyon, director, Business Services, School of Business Administration, Wayne University; Dr. E. T. Raney, chairman, Department of Management, Wayne University; Genevieve Trainham, former director, Merrill-Palmer Infant Growth Laboratory; and Harold G. Webster, executive director, Michigan Society for Mental Health. The following groups have also assisted us: Michigan Department of Health, Michigan Department of Mental Health, Michigan Society for Mental Health, Tuberculosis and Health Society of Wayne County, University of Michigan, and Wayne University.

REFERENCE

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New Geriatric Rehabilitation Service

A new geriatric rehabilitation service has been opened in Goldwater Memorial Hospital, the chronic disease research hospital of the New York City Department of Hospitals. The department has set aside 100 of the hospital's 1,500 beds for this cooperative service with the New York University-Bellevue Medical Center. Hospitalized and medically indigent older patients from any of the five boroughs of the city will be selected to correct existing disabilities and to prevent new disabilities.

At the recent formal opening of the service, the new hospital commissioner, Basil C. MacLean, M.D., and the director of the Medical Center's Institute of Physical Medicine and Rehabilitation, Howard A. Rusk, M.D., joined in indicating that "maximum use of community resources is planned. This will include cooperative efforts with the Department of Welfare and private social agencies, any of which may call upon the Geriatric Rehabilitation Service to help out with specific problems. At the termination of such help the referring source will reassume its own planning with the patient for the purpose of improving his adjustment in the community. At least one-half of the total number of old people who are helped will be accepted directly from other municipal hospitals."

Special Classes for Handicapped Children

HELEN M. WALLACE, M.D., F.A.P.H.A.; J. WAYNE WRIGHTSTONE, Ph.D.; and ELENA GALL, Ed.D.

Ably presented are the pros and cons of the question of special facilities for school-age children with orthopedic, visual, or hearing problems, and those who are gifted or mentally retarded, or socially or emotionally maladjusted.

The provision of adequate and equal educational opportunity for handicapped children is but one aspect of a program which should include prevention, early case finding, accurate diagnosis, prompt and maximum treatment and rehabilitation, and vocational guidance. The magnitude of the problem of education of handicapped children is illustrated by the fact that, as of 1948, 41 states had laws authorizing or requiring local school systems to provide special educational services for one or more types of children deviating seriously from what are supposed to be normal physical, mental, or emotional characteristics.[1]

It has been conservatively estimated that in the United States there are between 4,000,000 and 5,000,000 children of school age who are so exceptional as to need some adjustment in their school programs, if they are to attain optimum development.[2] In 1948 there were 378,059 exceptional children of various types reported as enrolled for special educational services in city school systems.[1] The problem then is large. It is of vital importance to the children concerned and their families, to the health, medical, and educational professions, and to the community because of the large expenditures of funds involved.

The types of handicapped children who are usually provided for through these special services may include those with cardiac, orthopedic, visual, or hearing problems; those considered to be "under par" physically; those who are mentally retarded; those who are gifted; and those who are socially and emotionally maladjusted. Special types of educational programs for these various types of exceptional children have existed in this country for over 50 years. The types of educational placement provided for handicapped children may consist of the following: regular classes in public and private schools; special classes in regular public and private schools, such as health improvement, cardiac, orthopedic, braille, sight conservation, and cerebral palsy; special separate day schools; special separate residential schools; educational service provided for children in hospitals and convalescent institutions; and home instruction for the homebound group.

Many of the educational programs now include similar services for preschool children. In addition, it has been the usual custom to provide special transportation to school for those physi-

Dr. Wallace is director, Bureau for Handicapped Children, Department of Health; Dr. Wrightstone is director, Bureau of Educational Research, Board of Education; and Dr. Gall is director of special education, Hunter College, New York, N. Y.

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Table 1—Data on Special Classes in New York City Public Schools—1951–1952

	Type of Special Class			
	Cardiac	Orthopedic	Braille	Sight Conservation
Estimated number of handicapped children in school	7,000–10,000	4,200	?	?
Number of special classes	45*	39* **	12†	105†
Number of children registered	727	622**	105	1,334
Average register per class	16.2	15.9	8.8	12.7
Ratio of children in special class to:				
1. Total school population	10.5‡	8.9‡	1.2‡	14.6‡
2. Estimated number of handicapped children in school	Per cent 10.3–7.3	Per cent 14.8	?	?

School population in 1951–1952 was as follows:

Elementary schools	585,298	693,660
Junior high schools	108,362	
Academic high schools	166,234	209,847
Vocational high schools	43,613	
Special	4,134	
Total	907,641	

* In elementary and junior high schools only
† In all types of schools
‡ Per 10,000 school population
** In addition there are eight special cerebral palsy classes with a total registration of 100 children

cally handicapped children who otherwise might not find it possible to attend school.

Because of the size of the problem, the expense involved, the length of time special educational services have existed, and the fact that there has been some lack of unanimous agreement on the relative values of special versus regular classes for handicapped children, this report is presented, using New York City data. We will attempt to discuss and answer certain basic questions: What is the extent of the problem in a local area? What are the costs involved in educating children in special classes? How appropriately from the medical viewpoint are children being placed in special classes? What are the principles from a public health viewpoint in the placement of children in special classes? What are thought to be the advantages and disadvantages of the placement of children in regular versus special classes?

Extent of the Problem

Table 1 demonstrates the size of the special class populations in New York City public schools for the cardiac, orthopedic, braille, and sight conservation groups. The ratios of the children in the special classes to the total school

Table 2—Comparison of Special Classes and Children in Them in New York City—1938–1939 and 1951–1952

Type of Special Class	1938–1939		1951–1952	
	Number of Classes	Number of Children	Number of Classes	Number of Children
Cardiac	88	2,025	45	727
Orthopedic	123	2,423	39	622
Sight conservation	91	1,633	105	1,334
Braille	12	96	12	105

population are 10.5, 8.9, 1.2, and 14.6 per 10,000 school children for the cardiac, orthopedic, braille, and sight conservation groups, respectively. The percentage in special classes of the total numbers of handicapped children are 7–10 per cent for the cardiac group and 15 per cent for the orthopedic group. In addition, there were 318 cardiac children (3–5 per cent) and 781 orthopedically handicapped children (19 per cent) on home instruction. The numbers of such children in hospitals and convalescent institutions during this same period are unknown. Thus, the great majority of children in school handicapped with cardiac, orthopedic, or visual problems are in the regular classes. The average number of children per special class ranges from 8.8 in the braille group to 16.2 in the cardiac group, compared with a citywide average of 31.5 children per class, indicating that special classes are one-half to one-third the size of the regular classes in the public schools.

A comparison of these data for 1951–1952 with similar data in the city for 1938–1939 (Table 2) reveals significant decreases in all groups except the braille group, which increased in this 13-year period. The number of students per special class has also decreased in this period, except in the braille group. Whether these decreases are related to a decrease in the specific handicapping conditions in the general school population or to the placement of physically limited children in regular classes who previously were on the register of special classes, or both, is unknown.

What Are the Costs Involved?

Table 3 shows the annual cost per pupil in the regular and special classes in New York City. The most costly classes are those provided for children who are blind or deaf, as would be expected. These cost data are based upon pedagogical salaries only and do not include the cost of supplies and special equipment. The cost of the classes per child increased over a 13-year period approximately 50 per cent in all classes except at the School for the Deaf. Transportation is a separate costly item and increased in cost 231 per cent in this 13-year period.

Appropriateness of Placement of Children in Special Classes

To date there have been very few reports on studies of the appropriateness of placement in special classes in schools. In 1940 and 1941 a series of studies of children in orthopedic and cardiac classes, and of children at the special public school for the deaf, indi-

Table 3—Cost per Pupil in Special Classes—New York City

Type of Class	1938	1951–1952	Per cent Increase	Ratio of Cost in Special Class to Regular Class in 1951–1952
Regular	$150.00	$228.83	52	
Cardiac	262.82	389.96	49	1.7
Orthopedic	267.86	440.48	64	1.9
Sight conservation	294.70	466.05	58	2.0
Braille	515.26	778.60	51	3.4
School for the Deaf	570.67	729.84	28	3.2
Cost of transportation	$ 45.00	$149.50	231	

cated that many of the children did not require placement in the special classes or in the special school.[3-6] In Chicago a study was conducted in 1951 which showed that "many children had remained in a special school for many years after a mild attack of rheumatic fever which left little or no heart damage. Many were able to assume full and normal activity even though a heart murmur persisted."[7]

Within the past two years in New York City special studies have been conducted jointly by the City Health Department and Board of Education on children currently placed in special cardiac, orthopedic, sight conservation, and braille classes. Because of the fact that New York City has 17 per cent of the children in the country's sight conservation classes, 15 per cent of the children in the country's braille classes, and 4 per cent of the children in the country's orthopedic classes,[1] any findings in the New York City group may be of significance to classes and programs elsewhere in the country. In each of the special studies at least one medical specialist in the respective medical specialty personally examined the children and reviewed the medical records of the children in the special classes.* The samples covered in the studies are shown in Table 4. The percentages of special classes included in the studies ranged from 10.5 per cent to 64.4 per cent, and the percentages of children from 7.9 per cent to 31.4 per cent.

Children in Sight Conservation and Braille Classes

This study[8] was conducted by the Bureau for Handicapped Children of the City Health Department with the cooperation of the Bureau of School Health from November, 1952 to January, 1953. The ophthalmological diagnoses of the children in the classes are shown in Table 5. The greatest probable causes for placement were refractive errors (45 per cent), most of which were myopia with or without astigmatism;

* The medical aspects of these studies were conducted by the following personnel of the Bureau for Handicapped Children: Cardiologists: Adolph Berger, Stanley Greenfield, and Conrad Rosenberg; Orthopedic Surgeons: William Cooper and Victor Mayer; Ophthalmologists: Samuel Lossef and Walter Schachat; Pediatricians: Myra Palmer and Helen Wallace; Public Health Nursing Consultant: Leah Hoenig. In addition, in the cardiac study, four of the five Cardiac Consultation Service Clinics of the Bureau for Handicapped Children, Department of Health, participated.

Table 4—Children Studied in Special Classes in Public Schools in New York City—1951–1953

Type of Special Class	Classes			Children		
	Total Number	Number in Study	Per cent in Study	Total Number	Number in Study	Per cent in Study
Cardiac	45	29	64.4	727	74	10.2
Orthopedic	39	9	23.1	622	49	7.9
Sight conservation	105	11	10.5	1,334	149	11.1
Braille	12	4	33.3	105	33	31.4

diseases of the choroid and retina (9 per cent), most of which were central choroiditis; congenital nystagmus (8 per cent); congenital cataracts (7 per cent); and amblyopia for occlusion (6 per cent). Together, these five diagnoses account for 75 per cent of all the probable causes. In the sight conservation group, these same five diagnoses are the important ones, accounting for 83 per cent of all the probable causes. In the braille group the greatest probable causes for placement were diseases of choroid and retina (20 per cent); congenital cataracts (13 per cent); optic atrophy (13 per cent); and retrolental fibroplasia (10 per cent). This distribution of probable causes in the sight conservation and braille groups in New York City in 1952 is similar to that reported by Kerby for the United States.[9, 10]

For the entire group of 182 children included in the study, a minimum of 58 (31.9 per cent) did not require this type of placement on the basis of medical criteria (Table 6). Furthermore, of the entire group of 58 children inappropriately placed, 20 children never required this type of placement at all on the basis of the medical examination data. The percentages of children inappropriately placed, on the basis of medical criteria alone, were approximately 37 per cent in the sight conservation classes in elementary and junior high schools, and high schools. On the other hand, none of braille group in elementary and junior high was inappropriately placed, but 19 per cent of the braille high school group was inappropriately placed. In addition to the 58 children definitely known to be inappropriately placed, there were 19 children about whom it was impossible to make a decision concerning placement because of inadequate medical information.

Of the 58 children inappropriately placed at the time of the study, 54 in sight conservation classes belonged in regular classes, three in braille class belonged in sight conservation class, and one in sight conservation class belonged in braille class in the school system. Thus, 57 of the 58 children were overplaced and one underplaced.

The period of inappropriate placement is shown in Table 7. For the entire group of 58 children inappropriately placed whose period of inappropriate placement was known, the period of inappropriate placement was 1,283 calendar months, or an average of 23.3 calendar months per child inappropriately placed. The longest period of inappropriate placement was 74 calendar months for a child in braille class in high school.

For the entire group of 182 children

Table 5—Probable Diagnosis Accounting for Placement

Diagnosis	Total Number	Sight Conservation	Braille
1. Refractive errors	89		
A. Myopia	73	70	3
B. Myopic astigmatism	14	14	
C. Hyperopia	2	2	
2. Diseases of choroid and retina	17		
A. Disseminated choroiditis	1		1
B. Central choroiditis	9	5	4
C. Hereditary macular degeneration	3	2	
D. Macular degeneration	2	2	1
E. Coloboma of macula	1		1
F. Retinitis pigmentosa	1		1
3. Congenital nystagmus	16	15	1
4. Congenital cataracts	14	9	5
5. Amblyopia for occlusion	12	12	
6. Optic atrophy	7		
A. Primary	4	2	2
B. Secondary to brain tumor	2		2
C. Secondary to craniostenosis	1		1
7. Albinism	7		
A. Complete	5	5	
B. Partial	2		2
8. Glaucoma	4		
A. Congenital	3	2	1
B. Secondary	1		1
9. Retrolental fibroplasia	4		4
10. Congenital amblyopia	4	4	
11. Esotropia	3	3	
12. Microphthalmus	3	1	2
13. Retinoblastoma	3	1	2
14. Corneal disease	3		
A. Leucoma	1		1
B. Nodular dystrophy	1	1	
C. Interstitial keratitis	1	1	
15. Detachment of retina	2	1	1
16. Uveitis	1		1
17. Atrophic globes	1		1
18. Hurler's disease	1		1
19. Ophthalmia neonatorum	1	1	
20. Exotropia	1	1	
21. No diagnosis	3	2	1
Total	196 *	156	40

* Fourteen children had 2 diagnoses (7 in sight conservation and 7 braille classes) of such major importance that it was impossible to determine which was the primary cause of special class placement

studied, the medical agency is shown in Table 8. In the groups where the numbers are large enough to have statistical significance, the medical agent with the lowest percentage of inappropriate placement is the qualified ophthalmologist (17.0 per cent), with the accredited hospital second (28.6 per cent), and the Bureau for Handicapped Children's Eye Clinics third (43.8 per cent).

Table 6—Appropriateness of Placement of Children in Sight Conservation and Braille Classes

Type of Grade and Class	Totals	Appropriate	Not Appropriate	Unknown	Minimum Per cent Inappropriately Placed
Sight Conservation					
Elementary and junior high school	115	58	43	14	37.4
High school	34	18	12	4	35.3
Braille					
Elementary and junior high school	17	17	..	..	0.0
High school	16	12	3	1	18.8
Total	182	105	58	19	31.9

Children in Cardiac Classes

This study [11] was conducted in 1951 by the Bureau of Educational Research of the New York City Board of Education with the cooperation and assistance of the City Health Department and the New York Heart Association. The significant medical findings of the 74 study children in the eighth grade in special cardiac classes are demonstrated in Table 9. Of the 74 children, three (4.1 per cent) were found to have no heart disease; 21 (28.4 per cent) were found to have possible and potential heart disease (patients in whom the symptoms or signs, though suggestive of heart disease, do not justify a definite diagnosis and from whom a history of an etiological factor which might cause heart disease is obtained); and 50 children (67.5 per cent) were found to have organic heart disease. Of the 50 children with organic heart disease, 37 had rheumatic heart disease, and 13 had congenital heart disease. Of the 50 children with organic heart disease, two were given A status (no limitation of physical activity) and 39 were placed in Class B (permitted to engage in all physical activities save violent competitive sports). Thus, 41 of the organic group, three noncardiacs, and 21 with possible potential heart disease (total of 87.9 per cent) probably did not require placement in the special classes on the basis of medical criteria. It is recognized, however, that for some of these children a limited period in special classes may assist in educational rehabilitation for instructional losses and in psychological rehabilitation for mental health losses caused by illness. Of the remaining nine children with organic heart disease, significant restriction was indicated for them; they included two children with tetralogy of Fallot, one child with interventricular septal defect, three children with rheumatic heart disease with marked cardiac enlargement, and three with organic disease who had had active rheumatic fever less than one year prior to the examination (Table 9).

In a subsequent smaller study in 1952 conducted [8] on all 19 children in two cardiac classes in an elementary school in Queens, six were overrestricted (32 per cent) and one (5 per cent) was insufficiently restricted; 12 children (63

Table 7—Period of Inappropriate Placement in Sight Conservation and Braille Classes

Period Months	Sight Conservation		Braille	
	Elementary and Junior High School	High School	Elementary and Junior High School	High School
Under 6	6			
6–11	10	3		
12–17	6	1		
18–23	7	1		
24–29	1			
30–35	5	1		
36–41	4	2		
42–47				1
48–53		1		1
54–59	1	1		
60–65				
66–71		1		
72–77		1		1
Number of children inappropriately placed	40 *	12	..	3
Number of months of inappropriate placement	701	412	..	170
Average	17.5	34.3	..	56.7

* In addition there were three children of unknown duration

per cent) were appropriately placed. Of the 19 children, 13 had rheumatic heart disease, five had congenital heart disease, and one had no heart disease.

Children in Orthopedic Classes

This study [8] was conducted by the Bureau of Educational Research of the New York City Board of Education with the cooperation and assistance of the City Health Department in 1952. The significant medical findings of the 49 study children in the eighth grade in special orthopedic classes are summarized in Tables 10 and 11. Thirty-one per cent of the children were found to be inappropriately placed, all in the direction of overplacement, i.e., they should have been in regular classes. The different types of medical treatment agencies made no difference in the appropriateness of class placement. While the numbers are small, the diagnostic condition seemed to be a factor in appropriateness of placement (Table 11). Of the 49 children, 18 had unlimited ability to climb stairs, three could climb three flights of stairs, 12 could climb two flights of stairs, 12 could climb one flight of stairs, and four could climb no stairs; thus 93 per cent could climb at least one flight of stairs.

In another study [8] in 1952 conducted on all 25 children in two orthopedic classes in one elementary school in Queens, nine (36 per cent) were appropriately placed; six (24 per cent) belonged in a class for mentally retarded children; five (20 per cent) belonged in regular class; for the five remaining children, no decision could be made because of the need for psychometric testing in four, and a hearing evaluation in one.

Some Principles in the Placement of Children in Special Classes *

If special classes for handicapped children are to be maintained within the regular schools, it would seem desirable to establish certain principles under which they might operate for the maximum benefit of the children, their families, and the community as a whole. Most physically handicapped children will, upon reaching maturity, participate in the life of a community. Child life lived apart from normal children is not considered to be conducive to the development of the personality traits necessary for a shared social life. In so far as is possible, handicapped children should participate in the normal school activities. It is not enough to know that a child has a visual, cardiac, hearing, or orthopedic handicap; one also must know the degree, plus his social and psychological adjustment. The special classes should recognize the differences in children's needs, abilities, and interests, and the necessity for directing them toward ultimate adult adjustments compatible with their capacities. Modifications of the school program should not necessarily follow any standard pattern, but should be individualized in terms of the changing needs of individual children. Placement

* Because of lack of space, this section has been condensed.

Table 8—Analysis of Medical Agency and Appropriateness of Placement of Children in Sight Conservation and Braille Classes

Medical Agency	Total Number	Inappropriately Placed	
		Number	Per cent
DHEC	64	28	43.8
Qualified ophthalmologist	47	8	17.0
Accredited hospital	28	8	28.6
Optometrist	12	4	33.3
DHEC and optometrist	5	1	20.0
Nonaccredited hospital	5	2	40.0
DHEC and qualified ophthalmologist	4	2	50.0
Partly qualified ophthalmologist	4	2	50.0
DHEC and nonaccredited hospital	3	2	66.7
Accredited hospital and optometrist	2	1	50.0
" " " qualified ophthalmologist	1	0	0.0
Qualified ophthalmologist and optometrist	1	0	0.0
Neurologist	1	0	0.0
Unknown	5	0	0.0
Totals	182	58	31.9

Definitions

1. DHEC—Department of Health Eye Clinic
2. Qualified Ophthalmologist—A physician who is a diplomate of the American Board of Ophthalmology or who is an associate attending or better on the staff of a hospital approved by the American Medical Association for residency training in ophthalmology
3. Accredited Hospital—A hospital approved by the Council on Medical Education and Hospitals of the American Medical Association for residency training in ophthalmology
4. Partly Qualified Ophthalmologist—A physician who does not meet the qualifications of (2) above, but who has a rating of specialist in ophthalmology by the Workmen's Compensation Board and who has a rank lower than that of associate attending on the staff of a hospital approved by the American Medical Association for residency in ophthalmology.

Table 9—Functional and Therapeutic Classification * of Study Children by Age

Age	Non-cardiac	Possible and Potential Heart Disease	Organic Heart Disease						
			IA	IB	IC	IIB	IIC	IIIE	Total
11	0	0	0	1	0	0	0	0	1
12	1	0	0	0	1	2	1	0	5
13	1	11	1	6	0	10	1	1	31
14	1	8	1	11	3	2	2	0	28
15	0	0	0	3	0	3	0	0	6
16	0	2	0	0	0	1	0	..	3
Total	3	21 †	2	21	4	18	4	1	74
Per cent of Total	4.1	28.4	2.7	28.4	5.4	24.3	5.4	1.3	100.0

* Based on the Classification adopted by the New York Heart Association [12]

† Include 13 children with potential heart disease and eight children with possible and potential heart disease

in a special class may be desirable at one time and unnecessary at another. The primary objective should be to return as many children as possible to regular classes in as short a time as possible. Vocational guidance, recreational activities, and a stimulating general educational program, with participation in many of the activities of normal children, can do much to safeguard the child against acquiring undesirable habits and attitudes.

The specific principles may be briefly summarized as follows: Special classes should be provided for those children who need them and who otherwise would not be able to attend school; special classes should provide the necessary services essential to meet the individual needs of the children in them; medical criteria should be established by medical experts for the admission to, renewal of, and discharge from placement in special classes in order to serve as a general guide for physicians responsible for the care of handicapped children; children should be placed in special classes and their placement renewed only upon the recommendation of qualified medical specialists, and should remain under the guidance of well trained personnel in the various categories concerned, and with little or no segregation of children placed in the special classes. This principle is of major importance if children are to be given their opportunity of normal psychological growth and development. There should be a good record system to provide adequate data on each child's physical progress and emotional adjustment, and there should be easily accessible physical facilities for easy mobility of the children.

Advantages, Disadvantages, and Values of Special Classes

Very few studies of a factual, objective nature have been performed to analyze the value of the special classes to the children in them. This lack of studies is surprising in view of the large numbers of children involved, the large amounts of funds expended, and the length of time special classes have been in operation. In 1916 in New York City the Association for the Prevention and Relief of Heart Disease studied the problem for a three-year period and in 1923 recommended that the segregated classes for children with rheumatic

Table 10—Appropriateness of Placement and Medical Treatment Agency—Children in Orthopedic Classes

Type of Medical Treatment Agency	Appropriate Placement		Inappropriate Placement		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Private physicians	9	69.2	4	30.8	13	100.0
Orthopedic surgeons	4	80.0	1	20.0	5	100.0
Other than orthopedic surgeons	5	62.5	3	37.5	8	100.0
Hospital clinics	25	69.4	11	30.6	36	100.0
With approved orthopedic residency	24	70.6	10	29.4	34	100.0
Without approved orthopedic residency	1	50.0	1	50.0	2	100.0
Total	34	69.4	15	30.6	49	100.0

fever or heart disease be abolished, as they were considered unnecessary for 92 per cent of the children.[13] In 1926 this same group reiterated that the cardiac segregated classes should be abolished and children classified as potential cardiacs, or Class I or II A should be transferred to the regular classes.[13] In 1941 a committee appointed by the New York City Board of Education concluded after another special study that the information and data available are inadequate for it to judge whether segregation of cardiac children in the public school system could be beneficial to them, whether such segregation is necessary, or whether they can be adequately cared for in regular classes.[13] In 1953 a report by Nebelung [14, 15] in the San Francisco public schools describes the results of a study to attempt to answer the same question for the rheumatic fever and cardiac group. This report states that "despite the failure of either the health class or regular class to demonstrate a superior rate of growth in the majority of the years studied, the tendency favored the health class," although the differences are not statistically significant. Placement in a health class was more conducive for the child to work at or above his mental ability than in a regular class environment, even though the regular class group had more gifted and less mentally retarded children in terms of native ability.

The potential advantages of special classes for handicapped children in the public day schools are these: There is opportunity for more concentrated observation and supervision of the children by physicians, nurses, and teachers. There is opportunity for easier administration of special services, such as the use of physical therapists for children with orthopedic handicaps, or the control of upper respiratory infections in classes with children who have had rheumatic fever. There is opportunity to concentrate services more easily in the fields of rehabilitation, and the emotional and vocational aspects. The special classes have a smaller census, providing opportunity for more individual attention and making it potentially easier to modify the regime to meet the needs of the individual child. If special classes were not provided, some children might not be able to

Table 11—Appropriateness of Placement and Diagnosis—Children in Orthopedic Classes

Diagnostic Group	Appropriately Placed		Inappropriately Placed		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Cerebral palsy	17	94.4	1	5.6	18	100.0
Poliomyelitis	14	77.7	4	23.3	18	100.0
Congenital dislocation of hip	3	60.0	2	40.0	5	100.0
Slipped epiphysis	2	66.7	1	33.3	3	100.0
Muscular dystrophy	2	100.0	0	0.0	2	100.0
Infection	1	33.3	2	66.7	3	100.0
Tuberculosis of bone	1	50.0	1	50.0	2	100.0
Osteomyelitis	0	0.0	1	100.0	1	100.0
Trauma	1	33.3	2	66.7	3	100.0
Atrophic limb	0	0.0	1	100.0	1	100.0
Amputation	1	100.0	..	0.0	1	100.0
Fracture ankle	0	0.0	1	100.0	1	100.0
Miscellaneous *	3	50.0	3	50.0	6	100.0
Total	34	69.4	15	30.6	49	100.0

* Composed one each of arthritis of spine, arthritis of hip, scoliosis, Perthes' disease, coxa vara, cavus foot.

attend school who are now able to do so. There is opportunity to collect data on morbidity, or the prevalence of handicapping conditions of moderate to severe degree among children in school.

The potential disadvantages of special classes and the problems related to them can be summarized. Segregation is a serious problem because of two factors. First, there is the potential adverse psychological effect on the handicapped child and the limited opportunity for normal children to observe and realize the capabilities of the handicapped group and to develop some better understanding of them. Second, because of the pattern of concentrating special classes in a small number of schools, children in them must attend school at some distance from their home. This means longer time spent by the handicapped child in travel to and from school, possible increase in the cost of transportation for the handicapped child, and less opportunity for the handicapped child to attend the same school as normal children with whom he might play in his own neighborhood.

There is also the problem of the wide age span and the wide range of educational ability in the special classes with the possibility that this might not be conducive to the best education of the handicapped child. In addition, there is the problem of inappropriate placement in special classes and sometimes difficulties in transferring children in and out of them, with the possibility that in a large school system some children may be "lost forever."

The cost of education of children in special classes is higher than in regular classes without much scientific objective evidence of some of the special classes' value to the children in them. Special health classes have a tendency at present

to become a wastebasket for some children in a school who are thought to be socially unacceptable or mentally retarded. This, however, reflects the general need for additional adequate community services for both of these latter groups of children. Finally, there is a possibility that by placing handicapped children in a special classroom two undesirable results may occur: the segregated handicapped group may be relatively neglected by the general educational and school health services, and the handicapped group in the special classes may receive all or most of the services, to the detriment of the normal or mildly handicapped groups in the regular classes.

Suggested Pattern and Next Steps

It is likely that, with our current knowledge, special classes in the public schools for the blind, deaf, and mentally retarded groups of children should be continued, but on a modified basis with more opportunity for mixing in many of the school activities with normal children.

It is probable that there should be special classes in public schools for the severely physically disabled group of children. Possibly these services should not be limited to cerebral palsied children alone, but should include other severely disabled ones such as those with widespread congenital malformations, poliomyelitis, muscular dystrophy, etc.

For the sight conservation group, a few communities such as Oakland, Calif., Columbus, Ohio, and certain areas in Illinois have eliminated special sight conservation classes and have used the principle of the traveling special teacher to raise the visual standards of all schools in a district.[15, 16] Apparently this plan is working well and has the added advantage of serving more children. Furthermore, a technical advisory ophthalmology committee in New York City stated recently that there was no scientific evidence that the use of special sight conservation classes contributed anything to the conservation of sight.

For other types of physically handicapped children, it is suggested that any school have one room where children with any type of health problem requiring modification of the school program may be placed temporarily. This should be looked upon as a highly flexible and fluid plan with easy and quick movement in and out.

Ideally, the regular classes should be smaller in registration and public schools should be one-story buildings or at least have elevators and ramps and easily accessible necessary physical facilities. It is possible that some of the problems in the education of handicapped children in schools are man-made, due to lack of foresight in planning adequate physical plants and facilities.

It is finally recommended that a series of carefully planned studies be made of the education of handicapped children in special versus regular classes in order to attempt to secure some final answers to this somewhat controversial and highly important subject.

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1954 Passano Award to Dr. Smith

Homer W. Smith, Sc.D., professor and chairman, Department of Physiology, New York University College of Medicine, has received the $5,000 Passano Foundation award for 1954. It was presented at a dinner in San Francisco on June 21. Walter B. Martin, M.D., president-elect of the American Medical Association, and Arthur L. Bloomfield, M.D., professor of medicine emeritus, Stanford University School of Medicine, were among the speakers. Dr. Smith's work has formed the basis for the several kidney function tests and has led to the development of surgical technics which have insured the success of many routine kidney operations. The Passano Foundation, formed late in 1943 to encourage medical science and research, particularly that having a clinical application, is sustained by annual contributions from the Williams and Wilkins Company, publishers of medical and science books. Dr. Smith received a 1947 Lasker Award of the American Public Health Association "for his distinguished contributions in the field of renal and vascular physiology."

On Hemagglutination Procedures Utilizing Isolated Polysaccharide and Protein Antigens

MAURICE LANDY, Ph.D.

Here are presented the technological details of new tests that may prove useful in epidemiological field studies of typhoid fever, diphtheria, and a variety of other conditions that remain as basic public health problems.

The adsorption of bacterial antigens on erythrocytes and the subsequent agglutination of such antigen-treated erythrocytes by specific antibody was first reported in 1948.[1] In the intervening five years the hemagglutination technic has found wide acceptance and has been applied to a number of bacterial antigens. The development of this test has coincided with current intensive investigations concerned with the isolation and characterization of bacterial antigens, and in certain instances it has been a useful adjunct in these studies.

It is commonly recognized that antigens which can be successfully adsorbed on normal erythrocytes, while they may be derived from a number of bacterial genera, appear to have one common attribute—all are polysaccharides. Protein antigens, on the other hand, are not adsorbed by normal erythrocytes, unless, as observed by Boyden,[2] erythrocyte receptors are first modified by treatment with tannic acid. Red blood cells thus modified before treatment with protein antigens are agglutinated by antiprotein antibody.

With the use of these two procedures it now is possible to adsorb on erythrocytes any of a large array of purified bacterial antigens, protein as well as polysaccharide, and to utilize antigen-modified erythrocytes in a variety of immunological problems. It is the object of this report to elucidate certain factors concerned in this phenomenon, to present data on antigens not previously studied in this reaction and, finally, to point out certain limitations, as well as the broad utility of this procedure.

Hemagglutination tests with purified antigens were carried out employing methods which have been described in the literature.[2, 3] Polysaccharide antigens were adsorbed on washed sheep erythrocytes by incubating mixtures of appropriate quantities of antigen and 10 per cent erythrocyte suspension for two hours at 37° C. The antigen-treated erythrocytes were washed three times and diluted to a 1 per cent suspension. On the other hand, protein antigens in appropriate concentration were adsorbed on sheep erythrocytes previously treated with 0.005 per cent tannic acid according to the technic of Boyden.

The antigens employed in this investi-

Dr. Landy is chief, Department of Bacterial Immunology, Immunology Division, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D. C.

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Table 1—Activity of Purified Antigens in the Sensitization of Erythrocytes for Specific Hemagglutination

	Antigens Derived from	Antigen Designation	Prepared by:	Chemical Composition	μg of Antigen Required for Sensitization of 1 ml. of 1 per cent Erythrocytes	
					For Detectable Agglutination	For Maximal Agglutination
Polysaccharides	Salmonella typhosa	O	Webster, Landy [4]	Lipopolysaccharide	0.01	2
	Serratia marcescens	P-25	Shear [5]	"	0.4	2
	Pseudomonas aeruginosa	PC-9	Ginger [6]	"	0.4	2
	Proteus vulgaris	OXK	Hilleman [7]	"	0.4	4
	Pasteurella tularensis	Schu	Wright [8]	"	0.8	4
	Diplococcus pneumoniae	SSSIII	Heidelberger [9]	Acidic polymer	2.0	10
	Escherichia coli	Vi	Webster, Landy [10]	"	0.01	1
					μg/ml. of 2.5 per cent RBC	
Proteins	Pasteurella pestis	Capsular protein	Amies [11]	Protein	0.16	4
	Pasteurella pestis	Toxin	Ajl [12]	"	0.8	4
	Corynebacterium diphtheriae	Toxoid	National Drug Co.	"	0.6	15
	Ovalbumin	..	Worthington Labs.	"	0.16	20

gation were of high purity. Many had been well characterized, and all were known to be essentially free of cross-reacting components. Their activity in specifically modifying erythrocytes was determined by treating 1 ml. volumes of a 1C per cent suspension with quantities of antigen ranging by fivefold increments from 100 micrograms to 0.00032 μg. Information pertaining to the source and chemical type of the purified antigens is recorded in Table 1. Results of antigen titrations in terms of the quantity of antigen per unit volume of erythrocytes required to yield detectable, as well as maximal agglutination (to the titer of antiserum), are also shown. The sera employed in these tests were prepared by immunizing rabbits with intact organisms from which the antigen had been derived and with the isolated antigens where they proved to be antigenic in rabbits. Sera against both the intact organism and the isolated antigen were available for Salmonella typhosa, Serratia marcescens, Pseudomonas aeruginosa, Escherichia coli, and Pasteurella pestis. Essentially identical antigenic activity was observed in tests with sera developed against these isolated antigens and their respective intact bacilli.

With the possible exception of the pneumococcus Type III polysaccharide, a rather surprising degree of uniformity was observed in the antigenic activity of polysaccharides and for the group of protein antigens as well. The similarity was most pronounced in the quantities of polysaccharides required to sensitize erythrocytes for maximal agglutinative activity (to titer of specific antisera). The fairly consistent picture of antigenic activity for each of the two groups of

antigens was quite unexpected since these products not only were isolated from biologically diverse microbial species but, in addition, had been prepared in 10 laboratories by different investigators and by widely different isolation procedures. The similarities in antigenic potency of the lipopolysaccharides, for example, suggest that all antigens of a given chemical structure, regardless of their generic origin, might exhibit the same activity quantitatively, if they were prepared by identical procedures. This is in contrast to reports by other workers which indicated that the amount of antigen required to sensitize red cells has varied considerably from one antigen preparation to another. In view of the data presented in Table 1, this variation may have been due to the fact that reactive components of the antigens tested represented only a portion of the total specimen.

In an effort to obtain information concerning uptake of these antigens by erythrocytes and the nature of receptors, a number of experiments were performed which may extend our information concerning the hemagglutination phenomenon. Normal sheep erythrocytes were exposed to the polysaccharide antigens listed in Table 1 at concentrations which, as previously established, yielded maximal agglutinative activity. Sensitization was effected with the antigens individually, consecutively, and simultaneously. In the consecutive or stepwise sensitization of red blood cells, the incubation time was reduced from two hours to one-half hour for practical considerations. In this procedure, washed red cells were exposed initially to a single antigen. Following incubation and washing an aliquot of these sensitized cells was removed for test and a second antigen was added to the remainder. The latter were also incubated and washed, and an aliquot of the washed cells, now sensitized with two antigens, was removed for test before a third antigen was added to the remainder. The procedure was repeated for each of the antigens employed. Cells sensitized with each of the antigens individually, consecutively, and simultaneously were added to appropriate dilutions of the homologous antisera, and the tests were incubated and read in the usual manner. The results of this experiment are presented in Table 2. The data reveal that the serological reactivity of erythrocytes treated with six polysaccharide antigens was identical regardless of whether the antigens were adsorbed individually, simultaneously, or consecutively. A similar experiment conducted with four protein antigens and employing tannic acid-treated erythrocytes, yielded comparable results, i.e., simultaneous or consecutive sensitization yielded hemagglutination titers which were the same as those obtained with erythrocytes sensitized with these antigens individually. Moreover, it was observed that tannic acid-treated erythrocytes retained their ability to adsorb polysaccharide as well as protein antigens. Sensitization with both types of antigens could also be accomplished simultaneously or in either sequence.

To determine whether it was possible to saturate all receptors on the red cell surface with a single antigen and thus block the adsorption of other antigens, aliquots of washed normal red cells were exposed to concentrations of 20 and of 5,000 μg (per ml. of 10 per cent cell suspension) of polysaccharide from S. marcescens, incubated for two hours, and washed. Twenty μg represented the smallest quantity of antigen providing maximal agglutination (for 1 ml. of 10 per cent cell suspension), while 5,000 μg represented a 250-fold excess of the marcescens polysaccharide. These two antigen-treated red cell suspensions were then exposed to a mixture of five other polysaccharide antigens, incubated for two hours, washed with saline, and

Table 2—Serological Reactivity of Erythrocytes Following Multiple Adsorption of Six Polysaccharide Antigens

Antisera Specific for Indicated Organisms	Antigens Employed for Adsorption	Reciprocal of Hemagglutination Titer Following: Adsorption of Homologous Antigen Alone	Consecutive Adsorption of Indicated Antigens: 0	0 Vi	0 Vi Schu	0 Vi Schu PC-9	0 Vi Schu PC-9 P-25	0 Vi Schu PC-9 P-25 SSSIII	Simultaneous Adsorption of All Antigens
Salmonella typhosa	0	2,560	2,560	2,560	2,560	2,560	2,560	2,560	2,560
Escherichia coli	Vi	640	0	640	640	640	640	640	640
Pasteurella tularensis	Schu	1,280	0	0	1,280	1,280	1,280	1,280	1,280
Pseudomonas aeruginosa	PC-9	320	0	0	0	320	320	320	320
Serratia marcescens	P-25	1,280	0	0	0	0	1,280	1,280	1,280
Diplococcus pneumoniae	SSSIII	1,280	0	0	0	0	0	1,280	1,280

1 ml. of a 10 per cent sheep erythrocyte suspension was treated with 20 μg of each antigen either individually, consecutively, or simultaneously as indicated

set up in hemagglutination tests with the six homologous antisera. Maximal serum titers for each antigen were obtained with red cells treated with excess as well as the predetermined adequate quantity of marcescens polysaccharide. This indicated that it had not been possible to saturate cell receptors with a high concentration of a single antigen. These observations suggest that different receptors or possibly different areas of the erythrocyte may be involved for each antigen. Consequently, the possibility of blocking out other antigens by a high concentration of any single one is unlikely.

In these experiments, involving 11 purified antigens, inhibition by one antigen of uptake of any other by erythrocytes was not encountered. However, factors which significantly affect the adsorption of certain antigens by erythrocytes (and their subsequent reactivity in hemagglutination tests) have been observed in the course of these studies. For example, the lipopolysaccharide from S. typhosa (0 antigen—endotoxin) as isolated from the viable bacterial cell contains more than 30 per cent of bound lipid[4] and is poorly adsorbed by erythrocytes. Heating, alkali treatment, or a combination of the two, releases as much as 50 per cent of this bound lipid and is accompanied by an increase in activity of the antigen of from 100- to 1,000-fold in effectiveness in sensitizing erythrocytes.[13] Thus, the initial product exhibits limited activity at a level of 10 μg per ml. of 1 per cent erythrocyte suspension, while after alkali treatment as little as 0.01 μg is effective. This was the only case encountered of interference with the uptake of polysaccharide antigens by erythrocytes. On the other hand, our studies with proteins indicate that the sensitization of tannic acid-treated erythrocytes with these antigens is far more susceptible to interference by external factors. Certain divalent cations, such as Fe, Ca, and Mg, interfered markedly with the uptake of plague capsular protein by tannic acid-treated erythrocytes.[14] The adsorption of diphtheria toxoid on tannic acid-treated red cells was only slightly affected by these

cations, but certain commercially prepared toxoids were shown to contain components, whose nature and composition is unknown, which interfered with the adsorption of pure toxoid on erythrocytes.[15] The inhibitors in such toxoids generally could be removed by electrodialysis.

Space limitations do not permit the detailing of other factors that may interfere with or complicate this useful serological procedure. However, it cannot be stressed too strongly that antigens of high purity are the principal requisites for satisfactory results. In this respect the test is no better than the quality of the antigen preparations employed. This is not meant to imply that useful information is not obtainable with bacterial extracts or culture filtrates. Such antigenic preparations have been employed by some investigators with excellent results. However, it is important to be mindful of the fact that most, if not all, bacterial species possessing a dominant antigen probably contain an undetermined number of minor, uncharacterized antigenic components as well. The presence of these secondary or minor antigenic components generally is not manifested in bacterial agglutination tests, but these antigens may be extracted from cells along with the principal antigen and thus be "uncovered" or rendered reactive. It already has been pointed out that a number of antigens may be simultaneously adsorbed on erythrocytes. Consequently, where relatively crude antigen preparations are utilized to sensitize erythrocytes, it becomes mandatory to establish the specificity of the hemagglutination test by appropriate absorption controls.

The hemagglutination technic has been applied advantageously to a variety of immunological problems in these laboratories and it may be appropriate to conclude by identifying certain of these studies. Erythrocytes treated with Vi antigen have been utilized to detect Vi antibody in the sera of typhoid carriers[3] and to measure Vi antibody response in field trials of experimental antityphoid immunizing agents. The isolated Vi antigen employed in the hemagglutination test offered advantages of greater stability, sensitivity, and specificity over available Vi bacterial agglutination reagents. Typhoid O antigen (endotoxin) adsorbed on red cells was found to equal or exceed the conventional bacterial antigen in terms of sensitivity and specificity in reacting with antibody.[13] Hemagglutination inhibition tests with this lipopolysaccharide may provide an exceedingly sensitive measure of free antigen (endotoxin) in the blood or urine of typhoid patients. The capsular protein of the plague bacillus adsorbed on tannic acid-treated red cells yielded a specific serological reagent which, in tests with sera from patients suffering from pneumonic plague, was 20–50 times as sensitive as the complement fixation test employing the same antigen.[14] The hemagglutination procedure was therefore capable of detecting plague antibody at levels very much lower than those required for fixation of complement. Finally, a hemagglutination test using diphtheria toxoid adsorbed on tannic acid-treated erythrocytes has been employed to measure the level of antitoxin in human sera. These sera also were assayed for antitoxin by the rabbit intradermal neutralization test. The resultant values appeared to be well correlated and when the data were appropriately analyzed the hemagglutination titers and units antitoxin were found to be linearly related. The hemagglutination procedure may therefore prove to be an acceptable alternate method for the measurement of diphtheria antitoxin.[15]

Our studies suggest that erythrocytes treated with purified bacterial antigens may, under appropriate conditions, pro-

vide useful tools in a variety of procedures applicable in public health laboratories. In many instances they offer substantial advantages over present methods, since purified antigens in the isolated state are uniform, stable, and readily standardized. Hemagglutination tests employing these materials are sensitive and simple serological procedures. Consequently, it seems likely that they will enjoy even wider use in the future than they have in the past.

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Maximum Utilization of Hospital Personnel

In order to help hospitals increase the effectiveness of their personnel, the Health Resources Advisory Committee of the Office of Defense Mobilization has prepared and made available for distribution a handbook entitled "Mobilizing Your Personnel Resources for Better Patient Care." A copy has been sent to the administrators of each hospital registered by the American Hospital Association, and, in the case of larger hospitals, to the chairman of the governing body, the chief of medical staff, and the director of nursing. The suggestions aim to alleviate the added strain upon an already short supply of health personnel that may be caused by a defense emergency. Two additional pamphlets are planned, the next to describe hospitals' experiences in organizing methods improvement programs. The handbook is available from the Government Printing Office, Washington, D. C., 25¢.

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Tonsillectomy and Poliomyelitis

During recent months serious consideration has been given to the effect of tonsil operations on susceptibility to infection with the virus of poliomyelitis. Dr. Kenneth F. Maxcy, who is retiring after a very distinguished career as a leader in the field of epidemiology at Johns Hopkins, has summarized the evidence on this point for us. We are grateful for this succinct summary.

In addition to the specific antigen-antibody interaction of poliomyelitis, it has become apparent in the past three decades that certain nonspecific factors and conditions may determine distribution of the virus in the central nervous system and, possibly, also the relative frequency of infections resulting in paralysis. Among those factors which have been considered are: endocrine changes, dietary deficiency, pregnancy, excessive physical activity and fatigue, subcutaneous or intramuscular inoculation of antigenic materials, and tonsillectomy. Evidence of the predisposing or provoking effect of at least the last three is fairly convincing. Our interest here, however, is limited to the last named condition.

Early observations on tonsillectomy and paralytic poliomyelitis were reviewed and summarized by Aycock (1942). From the data then available, there appeared to be a causal relationship between the removal of tonsils and the onset of bulbar poliomyelitis within the time interval corresponding to the incubation period of the disease, approximately one month. Furthermore, it appeared that the relative frequency of occurrence of bulbar, as compared with the spinal form of poliomyelitis, was greater at all ages in persons giving a history of previous tonsillectomy. The increased frequency of the bulbar form in comparison with other forms associated with recent tonsillectomy, has been confirmed by more recent epidemiological studies (John Anderson, 1945; Gaylord Anderson, et al., 1950; Siegal, et al., 1951) and by the results of animal experiments (von Magnus and Melnick, 1948; Sabin, 1938; Faber, et al., 1951). This relationship is explained as due to the fact that virus being present in the throat at the time of the operation passes directly into the central nervous system along traumatized nerve fibers. The second hypothesis, namely, that tonsillectomy at any previous time, i.e., the absence of tonsils, predisposes to the bulbar form of poliomyelitis, is not so easily explained. Nevertheless, the association has received confirmation from several investigators (Lucchesi and LaBoccetta, 1944; Top, 1952; Southcott, 1953; Weinstein, et al., 1954).

The most recent study is that of Anderson and Rondeau (1954) based upon epidemiological histories of 2,669 cases of poliomyelitis gathered during the 1946 outbreak in Minnesota. For all age groups, 71.4 per cent of 535 bulbar cases

gave a history of tonsillectomy at some previous time up to many years, as compared with 28.2 per cent of 936 severe spinal; 36.2 per cent of 908 mild spinal; 34.8 per cent of 299 nonparalytic cases. The results of these studies are singularly consistent in demonstrating that a history of tonsillectomy is from two to three times more frequent in patients with bulbar than it is with patients having spinal or nonparalytic poliomyelitis. The relationship holds when the comparison is made specific for age and sex.

When the comparison was reversed, similar results were obtained (Top, 1952; Weinstein, et al., 1954; Lucchesi and LaBoccetta, 1944). Thus, Anderson and Rondeau (1954) found that 36.6 per cent of previously tonsillectomized cases had bulbar involvement, as contrasted with only 9.4 per cent of those cases not previously tonsillectomized. Stated in different words, the number of bulbar cases observed in the tonsillectomized group was from three or four times as large as the number expected when the rates found in the nontonsillectomized group were applied on an age basis.

The possibility that the association between absence of tonsils and bulbar localization of the virus is due indirectly to some other factor was considered by Anderson and Rondeau. It had been suggested that those who had been tonsillectomized might be drawn from a higher economic level, since their families had the financial means with which to provide for tonsil removal, and that differences in the rate of bulbar involvement might be related to unknown factors associated with economic differences rather than with tonsils. Using the number of persons per room at the usual place of abode as a measure of economic status, Anderson and Rondeau found no difference between the bulbar and the severe spinal cases. So, too, the higher frequency of the bulbar type in tonsillectomized patients did not appear to be related to the frequency of nose and throat infections which prompted the tonsillectomy.

Thus, so far as the evidence goes at present, it appears that the absence of tonsils is in some measure a predisposing condition to bulbar localization of virus. Whether this absence of tonsils increases the risk of converting an immunizing alimentary infection into a paralytic attack is still unknown, nor is it clear how the absence of tonsils weakens resistance, although several explanations have been postulated. Nevertheless, if a tonsillectomized person develops clinically recognizable poliomyelitis, the likelihood of bulbar involvement may be three or four times as great as in one whose tonsils are in situ. This higher proportion of bulbar cases in tonsillectomized persons occurs at all ages regardless of the time elapsed since operation.

Even though the increased risk of bulbar localization of the virus is exceedingly small for the individual, it should be taken into account in considering the indications for tonsillectomy at any season of the year, but especially during the summer months.

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The Psittacosis Problem

During the pandemic of psittacosis in 1929–1930 it is estimated that there were 170 cases of this disease with 33 deaths in the United States. Most of the cases appeared to follow exposure to psittacine birds imported from tropical countries. Later it was discovered that psittacosis was prevalent in domestic parrot-breeding establishments and the Public Health Service in 1932 banned interstate transportation of psittacine birds unless they were certified by the state health authority to be free from psittacosis.

California where most of the aviaries were located at that time initiated a vigorous campaign to rid their bird-breeding establishments of psittacosis. Through a program of inspection, laboratory testing and compensation for birds destroyed because of infection, the aviaries in that state were rendered virtually free of the disease by 1937. Concomittantly, the incidence of the human disease in California and elsewhere in this country declined to a low level. Unfortunately, California was compelled to discontinue its control program because of the expense and inability to obtain cooperation of some bird-breeders.

In 1947 the Public Health Service decided that the certification plan placed in effect in 1932 was unenforceable and adopted new regulations which virtually banned interstate shipment of psittacine birds. In 1952 these controls were lifted and concurrently some of the states and larger cities also removed restrictions on sale of these cage pets. Simultaneously, a great popular demand for shell parakeets or "budgies" developed, so that it is believed that at least several hundred thousand are sold annually. Many of these are raised by back-yard breeders, some of whom are so greedy that it is reported that they sell birds which are so sick that they have been kept alive with antibiotics. It also has been stated that there is an extensive market in birds illegally imported from tropical countries. Since the relaxation of controls there has been a sharp increase in the number of human cases reported from an average of about 30 a year during the period 1945 to 1951 to 135 in 1952 and an estimated 100 in 1953. The reported cases undoubtedly represent only a small proportion of the true incidence, since cases of psittacosis are often designated as "virus pneumonia" or "flu" unless laboratory or epidemiologic studies are conducted.

Fortunately, the fatality rate has been falling and is now estimated to be only about 2 per cent. This decline has been attributed to the use of antibiotics but may also be due to changes in the sources of infection and in the completeness of reporting.

It is a temptation to place the blame for the increased incidence of the human disease on the relaxation of controls. During the past few years, however, it has

been learned that many species of birds, and perhaps mammals, may be reservoirs of infection for man. Pigeons, ducks, turkeys, and chickens seem to be especially important in this regard. From the published data it appears that parakeets and other cage birds, probably because of their close contact with persons in enclosed spaces, are more apt to cause infection than domestic fowl or pigeons. While there is a dearth of published evidence on this point, it also appears that most of the human cases arise from contact with birds that are shipped across state lines or from foreign countries. Perhaps a strengthening of controls on interstate shipments would cut down the number of grossly infected birds going into interstate commerce. However, there are apparently so many parakeet breeders scattered throughout the country that interstate restrictions would have to be coupled with strong control measures within the several states. Since psittacosis is generally considered to be such a minor public health problem, it is dubious whether the states would be willing or able to spend the funds required for controlling the disease within their boundaries. Furthermore, it is questionable whether rigorous and extensive intrastate controls are justified in view of the relatively mild type of disease now being observed.

It would appear that each state or health authority should at the least set up machinery which would enable it to ascertain how much psittacosis exists in the area and what are its sources. This would require some form of record-keeping by breeders of psittacine birds and by dealers in these and other birds capable of transmitting psittacosis. It also would necessitate better investigations of the sources of psittacosis than are usually made. After more facts are made available through such investigations it should be possible to decide on the relative importance of psittacine birds as reservoirs of infection and whether stricter controls over their transport and sale are necessary or not. In the meantime, it is probable that the most effective public health procedure would be the institution of vigorous educational programs designed to warn the public continuously of the danger of contact with apparently healthy psittacine birds.

Clearing House on Public Health Salary Information and Personnel Needs

A Michigan Recruitment Experiment

The School of Public Health of the University of Michigan experimented with two different recruitment technics in the spring of 1954. One was geared to the interest of undergraduate students in the university, the other to junior college students in the state.

In a week-long program, career possibilities in public health were stressed by highlighting activities designed to familiarize the undergraduate with undergraduate programs in public health. The Michigan Daily and the university radio campus news programs carried news items and feature stories describing activities. Posters were placed in residence halls and special exhibits in the men's dormitory. Faculty members of the School of Public Health were invited to discuss public health programs and careers at the men's residence halls; students and faculty participated in radio broadcasts over the inter-dormitory network and over the university radio facilities. The week was sponsored by the Inter-House Council, the student governing body within the men's dormitory system. William H. Henderson, resident lecturer in health education, assisted in the planning.

In the second program open house was held for 22 junior college students in the state who had shown an interest in the public health field. They toured the school and the campus, received individual counseling, and were guests at a luncheon. Here two faculty members discussed particularly the fields of sanitary science and health administration in each of which the school has special programs leading to a baccalaureate degree.

Further, a copy of "Careers in Public Health" was mailed to each high school in Michigan. This 24-page pamphlet, published in 1952 by the Institute for Research (Chicago), is one in its series of Careers Research Monographs. It gives a general background of public health, describes 13 different types of positions in detail, as well as outlining the activities and available positions in the Public Health Service.

Job Guide for Medical Occupations

The Bureau of Employment Security, U. S. Employment Service under the Department of Labor, Washington, has recently published a 20-page brochure designed to help counselors in discussing job opportunities in the health and medical occupations. Twenty-four medical and allied fields of work are covered. There are sections on physicians, dentists, osteopathic physicians, nurse-midwives, professional nurses, and on 19 paramedical specialties, including dental hygienists, dietitian-nutritionists, health educators, hospital administrators, medical social workers, physical therapists, sanitary engineers, veterinarians, and x-ray technicians.

Members of the public health professions will be gratified that the Department of Labor is showing an interest in counseling in this field of employment shortage. They will commend the references to such agencies as the Public Health Service, the APHA, the AMA, the ADA, and corresponding profes-

sional organizations. They will be startled, however, at some of the statements which are clearly erroneous as, for example, that the number of physicians in the United States has quadrupled in the last 25 years. Actually the increase during this period has been only from 147,000 to 205,000, or a rate per 100,000 population of from 127 to 134. Statements about sanitary engineers are completely misleading, the word "sanitarian" being printed as "sanitarium." Public health laboratory personnel of different grades are lumped indiscriminately with medical technologists without regard to the difference in functions. No recognition of the medical specialty of public health physician is given.

It is to be hoped that future editions will more nearly conform to the usual standards of accuracy and adequacy among federal government publications.

Encouraging Employee Ideas

The Municipal Civil Service Commission of New York City has an Employee's Suggestion Program. A Suggestion Award Board periodically selects employee suggestions for cash awards. It emphasizes that the program is not "seeking mammoth ingenious ideas that will revolutionize the operations of a department," but rather practical suggestions for eliminating wastes, reducing costs, saving time or labor, improving health and safety conditions, improving employee and public relations, among others. A recent list of cash awards included several for Department of Health employees—a clerk's suggestion for a smaller size proctoscopy sheet that would save several hundred dollars a year, a social investigator's suggestion for eliminating the necessity to supply extra copies of birth records in adoption procedures, and a clerk's suggestion for an improved method for filing orthodontic models.

The A. M. Dewees Scholarship

To aid in recruiting well trained personnel for the Pennsylvania Tuberculosis and Health Society and its 70 affiliated organizations, the society announces that a $2,000 scholarship for graduate study in health education, social administration, or related fields is available to Pennsylvania residents who are graduates of recognized colleges. The Arthur M. Dewees Scholarship in Public Health was established by the society to honor Mr. Dewees, for 33 years its executive secretary.

Applicants must have a bachelor's degree from a recognized college or university and be qualified for admission to a recognized school of public health or other recognized graduate school. Further information or application forms from R. Winfield Smith, Executive Director, Pennsylvania Tuberculosis and Health Society, 311 South Juniper St., Philadelphia 7, Pa.

Tuberculosis Research Fellowship

The New York Tuberculosis and Health Association announces the James Alexander Miller fellowship for research in tuberculosis for the year July 1, 1955 to June 30, 1956. With an annual stipend of $5,000, the fellowship is available to a qualified medical investigator who will devote full time to a research project on tuberculosis. There must be assurance that the applicant will be acceptable in the laboratory or clinic of his choice and that facilities necessary for the pursuit of the work will be provided. Applications should be submitted in duplicate by October 1. Forms and further information may be obtained from the association's headquarters, 386 Fourth Avenue, New York 16, N. Y.

PHS Training Courses, 1954–1955

The Public Health Service has announced laboratory refresher courses

and radiological health training programs and advanced sanitation courses for the coming months at the Communicable Disease Center and the Robert A. Taft Sanitary Engineering Center, respectively.

Communicable Disease Center

At Chamblee, Ga., beginning in September three different two-week courses in laboratory diagnosis of bacterial diseases; two courses of four and three weeks each in the diagnosis of parasitic diseases are offered. Two courses in medical mycology will be given in November and a one-week course in veterinary mycology in December. Late November will see a two-week course each in diagnosis of tuberculosis and methods in the study of pulmonary mycoses.

At the Virus and Rickettsia Laboratories in Montgomery, Ala., a two-week course in diagnosis of virus and rickettsial diseases will be given in October and repeated in March, 1955. A one-week course in diagnosis of rabies will be given in October and again in March.

In addition to the above, courses are presented by special arrangement in Laboratory Diagnosis of Malaria, Virus Isolation and Identification Tecchniques, Laboratory Diagnosis of Influenza, Typing of Corynebacterium diphtheriae, Special Problems in Enteric Bacteriology, and Phage Typing of Salmonella typhosa.

Further information about laboratory refresher training courses and application forms should be requested from Laboratory Training Services, Communicable Disease Center, P. O. Box 185, Chamblee, Ga.

Taft Sanitary Engineering Center

Between the beginning of November and the end of May, 1955, five different radiological health training courses will be given. Two of them will be repeated—a basic course in radiological health and one on problems of radioactivity in water works.

Beginning in September, 11 different three-day, one- or two-week advanced sanitation courses will be given. A detailed description of these with dates, is shown in a pamphlet, Training Programs, July 1, 1954–June 30, 1955. This and further information may be obtained from Officer in Charge, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

Cancer Society Nursing Scholarships

Reportedly the first in the nation, the Iowa Division of the American Cancer Society has set up a nursing scholarship program aimed at relieving the critical nursing shortage. The scholarships are part of a long-range program to expand the society's service for needy cancer patients. The awards grant tuition, fees, books, and uniforms.

As a result of this plan Iowa now has 134 nurse trainees attending 23 of the 27 Iowa nursing schools. In addition, 80 members of the first two groups of winners graduated in 1952 and 1953 are practicing in Iowa.

AAUW Offers Fellowships for Women

The American Association of University Women offers 27 fellowships to American women for advanced study or research during the academic year 1955–1956. Of these, 25 are unrestricted as to subject and place of study; one each is for study or research outside the United States, and for research in chemistry, physics, or biology for a woman with a doctorate. For 20 of the fellowships the stipend is $2,000 and is intended for women who have completed residence work for the Ph.D. degree or have already received the degree; for the remaining seven the stipend varies from $2,500 to $3,500 and is intended for more mature scholars who need a year of uninterrupted work for writing and research.

Closing date for applications is December 15, 1954. Detailed information from Secretary, Committee on Fellowship Awards, American Association of University Women, 1634 Eye St., N.W., Washington 6, D. C.

Cancer Research Grant Applications

The Committee on Growth of the National Research Council, acting for the American Cancer Society, is accepting applications for grants-in-aid for cancer research in the United States for the year beginning July 1, 1955.

Applications must be received before October 1 for consideration during the winter. Investigators already receiving support are notified individually regarding their applications for renewal.

In announcing the availability of the grants, the committee said "that an understanding of cancer depends upon a deeper insight into the nature of the growth process, normal and malignant. Therefore, the scope of the research program is broad and includes, in addition to clinical investigations on cancer, fundamental studies in the fields of cellular physiology, morphogenesis, genetics, virology, biochemistry, metabolism, nutrition, cytochemistry, physics, radiobiology, chemotherapy, endocrinology, and environmental cancer."

Application blanks and additional information from: Executive Secretary, Committee on Growth, National Research Council, 2101 Constitution Avenue, N.W., Washington 25, D. C.

Rehabilitation Seminar for Nurses

The Institute of Physical Medicine and Rehabilitation announces a three-week Seminar in Physical Rehabilitation for Nurses at three different periods during 1954–1955. The course is designed for registered nurses in both hospital and public health fields. The course is divided into three sections. One week each will be devoted to the discussion of Severe Disabilities and Their Rehabilitation, Skills and Methods of Functional Activities, and Clinical Experience. The role of the nurse will be discussed in relation to the doctor, physical, occupational, and speech therapists, medical-social worker, vocational counselor, and others, with emphasis on the contribution of each member of the rehabilitation team to the treatment of the whole patient.

The seminar will be given October 25–November 12, 1954; January 10–28, 1955; and April 4–22, 1955. Registered nurses with a minimum of one year's experience are eligible. Tuition is $60. Living expenses are estimated to be about $150 for the period. Application forms and further information from Mrs. Edith Buchwald Lawton, Institute of Physical Medicine and Rehabilitation, 400 East 34th St., New York 16, N. Y.

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Citizens Survey of Health Services

"Health Is Everybody's Business: Citizens Self-Appraisal of Community Health Services" was published early in 1954 by the Citizens Self-Appraisal Committee of Columbus and Franklin County, Ohio. The Citizens Committee of 200 members was divided into six major subcommittees and numerous smaller committees, representing civic, business, labor, and professional organizations in the county. They gathered information about health services in the city, suburbs, and rural areas, by health departments, schools, public hospitals and clinics, and special health agencies. Participating in this self-study were 69 groups and organizations.

The Citizens Committee study was a 10th year anniversary project of the Metropolitan Health Council with the cooperation of the Columbus Academy of Medicine. It was supervised by Sewall Milliken, director of health education, Ohio State Health Department, and was based on "The Guide to a Community Study." This guide was prepared by the Committee on Administrative Practice of the American Public Health Association, to be revised as its use indicates (A.J.P.H., 44, 5:696 (May), 1954).

Among the lacks found by the survey are incomplete provision of health services in the county through "the varied complex, inadequate, and uncorrelated resources of the communities and rural areas outside of Columbus"; inadequate salaries for public health personnel both in official and voluntary agencies; small proportion of tax budgets and Community Chest funds devoted to public health; no trained health educator on the staff of the health department; shortage of public health personnel, most notably nurses; and finally inadequate hospital beds for the mentally ill, the chronically ill, and for maternity cases, inadequate medical social service, inadequate mental hygiene facilities and inadequate services for the aged, chiefly rehabilitation. The report indicates a determination "to continue and enlarge the priceless service of the 200 volunteers who have conducted the unique and valuable self-study of community health resources and opportunities."

Columbus, with about 350,000 population, has a full-time organized health department. In the rest of the county, about 125,000 persons are served by four different health departments, each with a part-time health officer.

Again the Canadian Sickness Survey

The fifth in the series of reports resulting from the Canadian Sickness Survey of 1950–1951 presents information of particular interest concerning the volume of sickness in the Canadian population. The definitions of ill health should be compared with those of our National Health Survey since they provide a new set of concepts. The new definitions should prove useful and may supplant many others in the field.

Periods of ill health include "complaint periods," "disability periods," and "bed periods." Eighty per cent of Canadians reported one or more "complaint periods" averaging 51 days per person in the population and over 20 days per period. Three of every five persons were disabled at one time or another in the survey year, almost three-

quarters of these persons spending some time in bed.

It is of interest to note that while three-fourths of all persons with complaints were required to stay away from their usual activities, only half of the "complaint periods" involved disability. Hospital and home care planners will be concerned with the detailed breakdown of the national average of 5.6 bed days per person. These and a host of other figures, in addition to three case histories illustrating the application of the definitions, make this an important addition to health service planning tools.

"Canadian Sickness Survey, 1950–1951, Special Compilation: No. 5, Volume of Sickness," prepared jointly by the Dominion Bureau of Statistics and the Department of National Health and Welfare, April, 1954, is available from the Queen's Printer and Controller of Stationery, Ottawa, 25¢. The four earlier reports, dealing with expenditures for medical care, are also available. (See A.J.P.H., 43, 9:1239 (Sept.), 1953, for discussion of earlier reports.)

Evaluating a Labor Health Program

Franz Goldmann, M.D., chairman of the Medical Care Section, American Public Health Association, teams up with Evarts A. Graham, M.D., chairman of the Board of Regents, American College of Surgeons, in "The Quality of Medical Care Provided at the Labor Health Institute, St. Louis, Missouri." This report, representing the second evaluation undertaken in five years of this comprehensive medical care program established under collective bargaining agreements, is a creditable addition to the increasing number of attempts to evaluate such programs.

The authors appraise quantitative as well as qualitative adequacy of services provided by this group practice program which serves more than 14,000 trade union members and their families. Of particular interest are the careful analyses of medical records by Dr. Graham and his subsequent conclusions which state in part: "When one considers that the average weekly salary of those who are served by the Labor Health Institute is only about $50 per week, it seems almost a miracle that they can obtain such excellent medical service. I must confess that this experience opened my eyes to the advantages of prepaid medical care by a group of physicians, although I was by no means antagonistic to the idea previously."

Single copies free from Labor Health Institute, 1127 Pine Street, St. Louis, Mo.

Public Health Nursing News Letter

"News Letter-Public Health Nursing Section" is the newest publication of the American Nurses' Association. Its first issue of March, 1954, does little by way of announcing the direction in which it hopes to develop but asks rather for membership comment. Presumably, therefore, it is expected to develop as the section members indicate.

The first issue is a four-page printed leaflet with a variety of news notes with the chief emphasis on the program of the ANA annual meeting which was held in April. It will be remembered that in the reorganization of nursing agencies and allocation of functions, the Public Health Nursing Section of ANA took over those activities in the public health nursing field that should be the province only of professional nurses; the National League for Nursing deals with those matters that involve the community as well as the profession.

Putting Mental Health on the Map

The May, 1954, issue of "Florida Health Notes," the official bulletin of the state's Board of Health, does an excellent job of bringing the concept of men-

tal health to the ordinary citizen. It is particularly designed to make clear that "mental health touches the lives of all of us."

Good mental health is defined as: "To be able to live in the present, to get plenty of food, rest and recreation, to have self-respect, to be serious in one's efforts (yet to be able to laugh on occasion), to consider the interests of others and give them the right to be different, peculiar or even wrong, to have trust in others, to be able to face problems squarely and do something about them as they arise."

There is a page of historical summary from 1876 to 1954. In the earlier year the first Florida State Hospital for the Insane was established in an old federal arsenal; not until 1943 was the first child guidance clinic established. Not until 1945 was the movement begun for a state mental health association which was finally organized in 1950 and has now burgeoned into eight regional associations. In 1947 the State Board of Health was designated as the state agency to administer funds for mental health allocated by the Public Health Service. By the present time, there are mental hygiene clinics in 11 counties, in one of which the county health department has established a mental health program.

Rehabilitation or Relief?

"Vocational Rehabilitation of Public Assistance and Institutional Cases" is a brief factual report reflecting a recent and significant orientation of vocational rehabilitation agencies in a previously neglected area. During fiscal year 1953, close to one-fifth of the 60,000 persons rehabilitated under the state-federal programs had been receiving some help from public assistance agencies; 3,500 additional persons were in tax-supported institutions—tuberculosis, mental, and other—at the time they were accepted for vocational rehabilitation. State summaries of rehabilitation accomplishments are presented. The findings have important implications for the community in general, as well as for persons working in the public health, welfare, and rehabilitation fields.

A limited number of copies has been published by the Office of Vocational Rehabilitation, Department of Health, Education and Welfare, Washington 25, D. C.

New International Nursing Magazine

"International Nursing Review," the Journal of the International Council of Nurses, is one more evidence of the thought expressed by Wilbur A. Sawyer, M.D., in 1947 that, "International cooperation to prevent disease, and more recently, to promote health is an essential phenomenon of the present century." Beginning publication in April, 1954, this new quarterly sets out to fulfill "a need to know each other better, to understand each other better, and to help each other by comparing our various problems and their solution."

The first issue is largely in English, but also has some material in French and German, including the International Code of Nursing Ethics printed in all three languages.

The Review though starting as Vol. 1, No. 1 is not a wholly new publication; it appeared quarterly under this title from 1929 to 1939; then there was apparently a gap until October, 1945, when the quarterly International Nursing Bulletin first appeared. The present Review is its successor. The editor is Daisy C. Bridges; its offices are 19, Queens Gate, London, S.W. 7, England; $1 annual subscription.

Paper Cups and Tavern Sanitation

A report that may be of interest to sanitary inspectors because of its public health implications has been released by

the Lily-Tulip Cup Corporation. In a study made for Lily-Tulip by the Schwarz Laboratories, it was found that waxed paper cups have no appreciable disadvantage over clean glasses for serving beer and ale.

Tests for taste, foam formation and retention, gas evolution, and rise in temperature for both beer and ale were made in Lily-Tulip and a competing waxed paper cup, a clean glass, and a dirty glass. It was found that the beverages were likely to remain cool longer after pouring in the paper than in the glass. Likewise, the head of foam tends to be retained longer than in clean glasses. There is no discernible difference in odor or taste as between beer and ale consumed in paper cups or in clean glasses. This study should go far toward making paper cups acceptable in situations where economic, sanitary, or other conditions indicate them. It should also be useful to inspectors in answering questions of tavern owners.

Lily-Tulip Cup Corporation, 122 East 42nd St., New York 17, N. Y.

Worth Acquiring

"What Every Child Needs," a leaflet in small compass, says what has been said before but cannot be repeated too often—that a child needs not food, sleep, fresh air, and exercise alone. He needs also to have his emotional needs met by love, acceptance, security, protection, independence, faith, guidance, and control. In two colors and appealingly illustrated, it has many possible uses, at conferences, well-baby clinics, and a host of others. A large size poster of the same material is also available.

National Association for Mental Health, 1790 Broadway, New York 19, N. Y.; $1.10 per 100; poster 15¢. Reductions on quantity orders.

"Gains and Goals" is a brief statement of "Where we stand in the fight against some of the crippling conditions of childhood—and what we still must do." The six selected—cerebral palsy, epilepsy, muscular dystrophy, rheumatic fever, congenital malformations, and psychological problems—are not "all the important crippling diseases and conditions of children." They have been selected as among the main recipients of the research funds of the Association for the Aid of Crippled Children and "represent the kind of problems that need further interpretation."

For these six conditions this pamphlet represents a primer—what the disease is, how many are affected by it, what have been the advances, and what remains to be done. The brochure should be useful in helping the public to understand these conditions and to take a sympathetic part in their alleviation both money-wise and, even more importantly, in human relations with the handicapped.

Included also is a brief history of the transformation of the Association for the Aid of Crippled Children from a direct service agency operating in the narrow field of visiting nurse and physical therapy service for crippled children in New York City to a national agency with a program of prevention. Its major objectives are now demonstrations and pilot studies in rehabilitation, publications, and grants-in-aid of research.

The material was compiled by Herbert Yahraes, free lance writer, who has also prepared a number of Public Affairs Pamphlets in related fields. Association for the Aid of Crippled Children, 345 E. 46th St., New York City. Presently in mimeographed form—later to be printed with improvements suggested by readers and widely distributed, presumably free.

Annual Reports

"Annual Report on the Occasion of the 50th Anniversary" is a particularly

handsome annual report, one of the several special bows made by the National Tuberculosis Association as it completed its first half century of activities. Running through the report are two significant notes—that the strength of a national campaign against tuberculosis—as in fact against other diseases or evils—lies in the united efforts of workers in local communities. Thus the NTA set the pattern which has come to be standard in other national health agencies, the organization of state and local associations that raise their own money and carry on their own activities, receiving guidance rather than dictation from the national body.

The second significant note is the recognition, apparently early in NTA's history, that tuberculosis is a social and economic as well as a medical problem. Hence, NTA's definition of tuberculosis control activities has never been narrowly delimited, as evidenced by the number of local associations that are called tuberculosis and health associations and the cooperative arrangement made some years ago with the American Heart Association. The recent addition to the staff of the first director of social research is a further sign of increasing attention to the social and economic aspects of tuberculosis.

The report is unusually well written and will repay the reading of it. National Tuberculosis Association, 1790 Broadway, New York 19, N. Y.

"Lighthouse Log, 1953" uses on its cover a four-section circle to indicate the elements of the New York Association for the Blind's services for the blind—adjustment, training, employment, and recreation, with research as the core activity seeking to prevent blindness. The research arm of the association, the Ophthalmological Foundation, in 1950 sponsored 30 research projects into the causes and prevention of blindness. Out of a staff of nearly 350 workers, nearly one-half are blind. In 1953 they were aided by nearly 2,500 volunteers.

Still another notable statistic is that in ten years the number of contributions has increased sevenfold, the amount of their contributions nearly sixfold.

Philip S. Platt is the executive director, 111 E. 59th St., New York 22, N. Y.

"The People's Health, 1953–1954" reports on the activities of the Assiniboia Health Region, in Canada's Saskatchewan Province. Here is the story of what a sparsely populated area of 6,500 square miles does by way of meeting health needs. In addition to the main health center, there are two district offices staffed by public health nurses. Six nurses are provided for a population of 28,000. Per capita expenditures for the reporting year were $2.75 of which almost $1 was devoted to a children's preventive dental program. This report should be in the arsenal of those who are trying to persuade many areas of our own health-services-starved midwest that they can afford at least $1.50 per capita to provide basic services. M. K. Dehnel, M.D., M.P.H., is the regional health officer of the province.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Individual and Community Health—By William Stiles. New York: Blakiston (575 Madison Ave.), 1953. 492 pp. Price, $6.00.

This book presents an encyclopedic approach to 87 different topics organized largely around disease control. Seven of the 17 chapters deal with more than 50 different diseases categorized as air-borne, fecal-borne, arthropod-borne, animal-borne, environmental and occupational, and disorders of the nervous system. Attention is given to the occurrence, characteristics, treatment, prevention and control of each of the diseases. One chapter (15 pages) is devoted to "general measures of disease control."

Other chapters stress nutritional disorders, food sanitation, water, sewage and flies, with additional attention to disease problems. Accidents, first aid, and wound infections are also discussed. One chapter deals with maternal and child health, one with socio-sexual problems, another with problems related to medical care, and a fourth with advances in the health sciences and careers in the health sciences.

If the major purpose of the book is to prepare the college student to assume his responsibility for promoting health, preventing disease, and developing a social consciousness about health that might result in greater understanding of how to improve his own health and that of the community, one might question the extent to which this objective is achieved. Little attention is given to the interests of college-age students, and to the particular health problems with which they are confronted. Furthermore, one wonders whether the average undergraduate college student, using this text, would have sufficient background in the basic biological sciences to really understand much of the content. The use of a rather technical vocabulary in some sections of the book and the inclusion of content on disease frequently included in references for the student of public health or the medical student (usually in more detail), might discourage the general college student, or it might make him feel that he has a greater depth of knowledge in the fields discussed than he actually has.

For a basic text in college courses on "Individual and Community Health," too much emphasis is placed on disease and not enough on health promotion. As a supplemental reference for students, teachers, or health workers with some preparation in the health sciences, it should serve a worthy purpose. The author has brought together a great amount of information. The book is printed in two-column style and is illustrated with diagrams and tables. At the end of each topic there are a number of suggested readings. Another title would probably be more descriptive of the content of the book. MABEL E. RUGEN

National Family Survey of Medical Costs and Voluntary Health Insurance: Preliminary Report—By Odin W. Anderson. New York: Health Information Foundation (420 Lexington Avenue), 1954. 80 pp. Copies on request.

This publication is an important document for all health workers and for thinking citizens who wish facts on which to base health planning. In concise and intelligible form, it presents the basic facts on the current status of voluntary health insurance and its relation-

ship to family utilization and costs of certain medical care services. Based upon a single interview, using a carefully prepared and tested schedule, in a sample consisting of 2,809 families, the data appear generally valid. The sample closely approximates the United States population in most of the appropriate characteristics.

While the study methods may be subject to some criticism relating primarily to the problems of memory in a single interview covering a 12-month period, the methodology is not presented in any detail in this preliminary report, but will appear in a forthcoming more definitive publication. It is not felt, however, that the problems of methodology significantly influence the findings in regard to the major items of personal health service currently covered by most insurance plans, although such significant items as the utilization and costs of nonhospital physician services, drugs, medicines, and appliances may well be understated.

Nevertheless, the reported findings are significant in their demonstration of the achievements of voluntary health insurance in the course of relatively few years. Of still greater importance for the future is the clear statement of the tremendous unmet need and demand for health services. No matter what purpose one accepts for health insurance, the survey demonstrates that this method of financing medical care still has a long way to go despite its accomplishments.

For example, while 58 per cent of our population has some insurance protection, this protection covers only 15 per cent of the over-all family charges for personal health services. Surgical and other medical insurance covers 48 per cent of the population, while 57 per cent own hospital service insurance. Insurance benefits cover 50 per cent of all hospital charges, 38 per cent of all surgical charges, 25 per cent of all obstetrical charges, but only 13 per cent of all physicians' services.

Furthermore, families with insurance had median net charges, over and above benefits received from insurance, of $117 per year ranging from $77 for the lower income group to $198 for the highest. The figures emphasize the fact that these net charges to the insured families are as unpredictable for each individual family as are the covered costs. Debt is shown to be directly related to the proportion of income spent on health services, and to be essentially unaffected by insured status.

Insurance, the report shows, has not effectively reached rural areas, the self-employed, the low income groups, families without a father, or the vast majority of American workers who are employed in small groups. It has reached a high proportion of urban population and those employed in sizable groups.

The impact of insurance on utilization presents a major problem in considering its future role. Hospital admissions, for example, were 13 per 100 insured persons against 10 for the uninsured. Surgical services were received in a ratio of from 7 to 4 by the insured and the uninsured respectively. Also of interest is the fact that the insured rural population made even more use of hospitals than did the insured urban population—a difference deserving of further study.

The report notes that American families were charged 10.2 billion dollars for personal health services in the survey year and that they remained in debt for about 10 per cent of that total. Physician charges are said to amount to 37 per cent of the total with hospital charges equal to only 20 per cent. These are new and surprising data in the light of the Department of Commerce figures based on income.

The reader is urged to obtain and read carefully this major contribution to the arsenal of medical care facts.

JONAS MULLER

British Medical Bulletin, Vol. 9, No. 3: Viruses in Medicine—By C. H. Andrewes, et al. London: British Medical Bulletin (65 Davies Street, 1953. Pg. 169–244. Price, $2.75.

The British Medical Bulletin has published a valuable number on viruses in medicine containing 17 monographs by outstanding students in the field.

C. H. Andrewes writes on viruses yesterday, today, and tomorrow. Dr. F. M. Burnet writes on ecology of virus diseases. Other well known writers contribute on progress in viral immunology, chemotherapy of virus diseases and technics for the study of viruses.

Other chapters relate to smallpox, poliomyelitis, Coxsackie viruses, the common cold, the viruses of epidemic influenza, mumps, yellow fever, hepatitis, the psittacosis-lymphogranuloma group, Q fever in Britain, the post-infection encephalitides and some veterinary diseases of medical interest.

Altogether this represents an excellent review of viruses as seen in Great Britain. It deserves to be widely read in North America. It is the most up-to-date compressed summary known to the reviewer. REGINALD M. ATWATER

Sound Measurement Package—American Standards Association, Inc. New York: (70 East 45th St.), 1953. Price, $7.50.

This is truly a package, in plastic loose-leaf binding, of a group of carefully designed, precisely edited technologic reports of encyclopedic value in the general field of acoustics. The development of these reports was begun by the American Standards Association in 1932, under the sponsorship of the Acoustical Society of America; they were written by various committees of the country's authorities in the field. The scope of the series is as follows: "Preparation of standards of terminology, units, scales, and methods of measurement in the fields of acoustics and mechanical vibrations." The various brochures which compose the package have been published individually by the American Standards Association through the years since 1942, but for the most part since 1950.

There are 12 brochures in all. Each is introduced by an explanatory foreword and a roster of the pertinent working committee. The array of the categories included is as follows: Definitions (1)—a basic glossary of acoustical terminology; Measurement Procedures (2); Laboratory Calibration and Tests (4); Equipment for Sound Measurement (2); Audiometric Testing of Individuals and Groups. Standards and specifications are stated succinctly and in detail, and there is an ample array of schemata and diagrams in explanation.

Presumably additions will be made available from time to time as the work of the various investigating groups continues. In these days of burgeoning interest and concern with the problems of noise and the measurement of hearing in industry, public health and medicine, in terms of both prevention and conservation, this Sound Measurement Package is a fundamental reference work. WILLIAM G. HARDY

Symposium on the Leptospiroses December 11–12, 1952—Army Medical Service Graduate School, Walter Reed Army Medical Center. Washington, D. C.: Gov. Ptg. Office, 1953. 224 pp. Price, $1.00.

This book consists of authoritative and up-to-date reports presented at a symposium in 1952 at the Army Medical Service Graduate School. The participants included physicians, veter-

inarians, bacteriologists, and biochemists from all over the world. They stress the increasing awareness of the public health and livestock sanitary significance of the leptospiroses. The topics embrace every aspect, including the epidemiology, clinical and pathological manifestations, prophylaxis, control and therapy of the diseases in man and animals. Studies of the taxonomy, culture, animal inoculation, serological reactions, and biochemistry of the spirochetes are considered, with the practical aim of their rapid and accurate identification in body fluids and tissues during various phases of infection. The many problems confronting workers in this field as well as possible solutions are freely discussed. A brief but well selected bibliography follows each article. This inexpensive book provides the most comprehensive and recent information, some hitherto unpublished, in this rapidly developing field.

In view of its many excellent qualities, this book should be read or consulted by practicing physicians and veterinarians who depend on the laboratory for confirming or denying their clinical impressions, and by public health officials and laboratory workers concerned with epidemiological and laboratory aspects. A. B. STAVITSKY

Therapeutic Abortion—Edited by Harold Rosen. New York: Julian Press (8 West 40th St.), 1954. 348 pp. Price, $7.50.

For physicians and others responsible for personal and public health there are parts of this "anthology" which will supplement well earlier contributions on one or other of the several basic factors now recognized as so closely related as to demand common if not equal emphasis. Here lawyers, ministers of religion, anthropologists, family physicians, psychiatrists, pediatrists, and obstetricians swap experiences, tell case histories and do their share in putting this very controversial matter on a sounder basis, and to some degree offer thoughtful and wholesome conclusions.

The novelty in the volume is the effort to see the problem in the round rather than to add substantially to the facts, unless it be the encouraging word that the volume of therapeutic abortions has been shrinking and necessitous indications for them have been much reduced by better obstetrics and the new resources of medical management of reproduction.

Of the 21 chapters 18 (296 pages) are by physicians, of whom 12 are professed psychiatrists. The seven parts are titled: The Problem and Its Background; Related Problems; Mores, Laws, Ethics and Religion; The Hospitalized Abortion-Requesting Patient; Psychiatric and Psychotherapeutic Considerations; The Problems of Prevention; and Questions Raised and Problems Posed.

To the practitioners of public health, of whatever professional category, the two chapters on prevention by Drs. Karl Menninger and Sophie Kleegman bring the subject to practical conclusions. Useful pages are devoted to author-biography, a glossary, bibliography, name index and subject index. This volume with its authoritative authorship will be perhaps more in demand by the family physician than by other interested audiences. HAVEN EMERSON

Pneumoconiosis Abstracts: Volume I, 1926–1938—Bureau of Hygiene and Tropical Diseases, Bulletin of Hygiene. New York: Pitman (2 West 45th St.), 1953. 347 pp. Price, $12.50.

As stated on the book cover: "This volume is the first of two which will contain all the abstracts of papers relating to pneumoconiosis which have been published in the Bulletin of Hygiene

from the time of its first appearance in 1926, to the end of 1950. This book covers the period 1926–1938."

It is divided into 12 sections. The title of each section indicates its contents. First, there is a general section dealing with Industrial Hygiene, Occupational Dusts, Research in Various Aspects of Pneumoconiosis, Statistical Surveys, Tuberculosis and Cancer as related to industrial dust exposure, Radiographic Aspects and General Atmospheric Pollution. This is followed by six sections treating specific types of pneumoconiosis: Silicosis, Asbestosis, Pneumoconiosis of coal workers, Pneumoconiosis caused by other inorganic dusts, Pneumoconiosis caused by dusts of vegetable origin, and Fumes causing respiratory disease. The next two sections are concerned with dust itself. Section 8 is titled Sampling and Measurement of Atmospheric Dusts and Studies of Their Physical, Mineralological and Chemical Properties; Section 9—Methods of Suppression and Removal of Dust. The last three sections deal with Periodical Reports Related to Pneumoconiosis, Legislation on Pneumoconiosis, and book reviews.

Since the Bulletin of Hygiene is a British publication, and much of the early investigation of pneumoconiosis was done by British workers, there is a preponderance of abstracts of British literature. However, there is ample reference to American literature. Articles in German, French, Italian, and other languages are abstracted. A few articles are reprinted in full.

The main value of an abstract is to give the location of an article in the literature and some indication of its major subject matter rather than an exhaustive summary of its contents. Because of this, accurate listing of the publication, volume and pages, where it is to be found, as well as a complete index, is most important in a book of this sort. Comparison of a considerable number of the abstracts with the original articles in various journals showed no mistakes in listing.

There is an index of authors of six pages and an index of subjects of 21 pages. Both indexes are very accurate. The subject index is broken down into considerable detail so that it is relatively easy to find references to the specific aspect of the various subjects.

This book should be most valuable as a source of reference not only to physicians but also to engineers, public health workers, legislators, and anyone else concerned with the health of those employed in dusty occupations.

JOSEPH E. MARTIN, JR.

Welt-Seuchen-Atlas (World Atlas of Epidemic Diseases). Part I. Text in German and English—Edited by Ernst Rodenwaldt. Sponsored by the Bureau of Medicine and Surgery, Department of the Navy, Washington, D. C. Germany: Falk-Verlag (Hamburg 1, Burchardstr. 8), 1952. DM 225. New York: Stechert-Hafner (31 East 10 St.), 1952. 126 pp. 52 two-colored maps and 45 black and white. Price, $56.25.

This large loose-leaf volume (14 x 19 inches), the first of a series of three, is a collection of essays and maps dealing with geographic distribution of 15 infectious diseases in Europe, with special reference to Germany. For some diseases the geographic area is extended to include the Near East contiguous areas, and for cholera (1863–1868), leptospirosis and paratyphoid C world maps are given. The objective is to bring to light relationship between prevalence and geographic peculiarities. Sections deal with examples of six etiologic classes: (1) Bacterial; typhoid, paratyphoid C, cholera, bacillary dysentery, tularemia, leprosy. (2) Spirochetal; leptospirosis. (3) Viral; polio-

myelitis, infectious hepatitis, trachoma. (4) Rickettsial; louse-borne typhus. (5) Protozoal; amebic dysentery, leishmaniasis. (6) Metazoal; opisthorchiasis, ascariasis. Additional sections and maps relate to rainfall, temperature, and population.

Although the articles vary as to periods covered, collateral background and documentation, all are precise and otherwise thorough. The English versions are excellent, although in some instances considerably abbreviated.

The faults are of policy and not workmanship. Obviously it would have been preferable to present in one article, rather than piecemeal, the geography of each disease. The apparent intent is to furnish supplemental text and maps at a later date. If this is to be done, it would have been advantageous to have summarized, in all first articles, current knowledge of etiology and epidemiology. A second matter is that of selection of diseases. Of those included, there are only five at most, cholera, leprosy, poliomyelitis, typhoid fever, and louse-borne typhus, for which sufficiently accurate information is available, even for the limited areas included, to warrant painstaking and expensive map construction. The justification offered for inclusion of other diseases is rather intangible, viz., that demonstration of statistical ignorance may provide stimulus in attaining more accurate and comprehensive data.

Nevertheless, the volume is an extremely useful one which will become even more valuable as supplements are issued. It is recommended especially for medical and health department libraries.

This atlas was made possible largely through administrative and financial aid from the Bureau of Medicine and Surgery, U. S. Navy. The German scientists without this assistance must have remained mute. The partnership is an example of international cooperation of the highest type with resulting benefit to the medical world.

JAMES A. DOULL

The Needs of Older People and Public Welfare Services to Meet Them—By Elizabeth Wickenden for the Committee on Aging. Chicago, Ill.: American Public Welfare Association (1313 East 60th St.), 1953. 148 pp. Price, $2.00.

While this book was written primarily for welfare workers and definitely will, to quote the preface, "be of real value to the total social welfare field in clarifying the nature of the needs of older people and the role of public welfare in meeting them," it will be of considerable interest to public health personnel as well. Written under the sponsorship of the APWA Committee on Aging, the material carefully and lucidly develops its thesis that public welfare is in a unique position to identify the various facets of the problem of the aging; to approach the problem through a broad interpretation of the scope of the public welfare program; and to cooperate with other professional groups and with the community as a whole in planning and program development. The author repeatedly emphasizes that, as the problem of aging among the indigent is not qualitatively dissimilar from that among other economic groups, the public welfare worker is able to point up many community aspects which would otherwise remain hidden or at least never be given proper attention. Instances are cited in which welfare agency programs, originally developed for the indigent, have gradually been made available to higher economic groups.

Of course, one must not gain the impression that most public welfare agencies have the number and quality of workers to do the job outlined by the author. However, the objective of the

book is to acquaint the conscientious welfare worker with the tremendous potentialities of her job. The agency whose sole objective is to provide financial assistance or institutional care to an aged person would not deserve the title of "public welfare" agency. The real job extends into the fields of personal counseling, assisting in using available but unrecognized resources, helping to best meet individual needs, assisting in the procurement of satisfactory housing and employment, and providing for adequate self-expression and creativeness.

Of most direct interest to the public health worker are the sections on meeting the health and medical care needs of the elderly. These go far beyond provision of a physician's services or placement of the patient in a nursing home. There is explicit detailing of the many social and economic factors which must be understood and considered in determining the medical setting which will best meet the needs of the patient.

The reviewer would specifically recommend the book to those who have been concerned with the question of which official agency should administer welfare medical care. Whichever it is, it must be one which can provide the necessary social work in conjunction with the medical care required by the elderly patient or be in a position to coordinate its medical services with social services provided by other agencies.

I. JAY BRIGHTMAN

Highlights of the 1954 National Health Forum on Changing Factors in Staffing America's Health Services, March 24–26, 1954. New York: National Health Council (1790 Broadway), 1954. 116 pp. Price, $.75.

As a part of its annual meeting, the National Health Council in March, 1954, conducted a two-day forum on Changing Factors in Staffing America's Health Services. These highlights provide a condensation in 116 pages of the experience of many agencies and many differing points of view.

This forum was planned by a committee under the chairmanship of William P. Shepard, M.D. There are inspirational addresses providing perspective for the problem from Detlev W. Bronk, now the president of the Rockefeller Institute for Medical Research, and Dr. Franklin D. Murphy, the chancellor of the University of Kansas. The subject is presented in broad horizons as New Patterns of Living, Changing Governmental Health Programs, the Expanding Rehabilitation Concept, Increasing Demands for Training, and a report of What Existing Organizations Are Doing to Meet Health Personnel Needs. The scope of the effort is epitomized in the following quotation:

> Every health effort, whether made by voluntary or governmental agency, is dependent upon the competence and dedication of personnel. A hospital's bricks and mortar cannot save a single life. A scalpel must have a skilled hand to wield it. Yet despite the all-importance of the doctor, the nurse, the researcher, the educator, and others of the complex health group, the individual has scant control over the rapidly varying social and economic forces that spell adequacy or acute shortage among health personnel.

The council and the committee are to be congratulated on an achievement. Every public health worker who is alert to the problems of public health personnel will profit from this publication.

REGINALD M. ATWATER

Standards and Recommendations for Hospital Care of Newborn Infants: Full Term and Premature—New York: American Academy of Pediatrics (610 Church St.), 1954. 143 pp. Price, $1.50.

This paper-covered volume is the up-to-date revision of two earlier academy publications which had wide distribution and influence. As before, it presents

optimum standards for hospital facilities and practices so that the physical well-being of the newborn infant will be safeguarded, and the wholesome and normal relationships between the baby and his environment may be promoted.

There is nothing vague or intangible about the recommendations outlined. They are not only practical, but workable. Essential basic standards are printed in bold type, and any hospital which cares for newborn infants, whether rural or metropolitan, must meet them in order to be acceptable. Explanations, suggestions, samples and illustrations occur in regular type throughout the text and in the 60-page appendix, and will help particularly those hospitals which are faced with special situations of size, personnel, and administrative problems. The manual is conspicuously modern in type-set and outlining methods. It is handy in size, well indexed, and easy on the eye.

To implement the guide, the cooperation and collaboration of many groups will be needed. The manual itself was prepared with the advice and counsel of many allied organizations, and 14 of these have given their official endorsement, including the Maternal and Child Health Section of the APHA. It is proposed to organize local committees of representative professional groups in every community and to use this manual as a basis for accrediting hospitals as to their qualifications to care for newborns and prematures. This should be of particular interest and concern to public health workers in local areas throughout the country.

ELINOR F. DOWNS

Antibiotics—By F. A. Robinson. New York: Pitman (2 West 45th St.), 1953. 132 pp. Price, $3.00.

This volume consists of a general survey of the status of antibiotics at the time the text was completed. Because of the activity in this field, the most recent advances reported in the United States are not included. For example, there is no discussion of the new broad-spectrum drug, tetracycline, and there is only a brief mention of the present pharmacological status of chloramphenicol. Although a rather good job is done in presenting a general picture of antibiotics as a whole, errors of omission decrease the value of the book to those working in the field of antibiotics.

The book consists of nine chapters. Chapter two, which describes the production, development, chemistry, and clinical application of penicillin, is the longest, consisting of some 27 pages. Streptomycin is treated in a similar manner but somewhat fewer pages are used in its description. The broad-spectrum antibiotics, chloramphenicol, chlortetracycline, and oxytetracycline give the reader a general view of the chemistry, antibacterial activity, pharmacology, and clinical uses of these important chemotherapeutic agents. Other antibiotics, including those produced by bacteria, are briefly discussed. The lack of an annotated bibliography decreases materially the value of the text for those interested in using it as a base line for review purposes. For those students studying in the field of antibiotics, however, the book should be of value for obtaining a general panorama of the subject, since it does give, in a relatively few pages, an over-all picture of the presently available antibiotic drugs.

HENRY WELCH

Into Manhood—By Roy E. Dickerson. New York: Association Press (291 Broadway), 1954. 116 pp. Price, $2.00.

Supplanting the author's earlier volume, Growing Into Manhood, this current work is more comprehensive and up to date. Designed for lads of "pre-teen and early-teen" years, it ranges

logically and accurately over the wide area of their queries regarding the physical, emotional and ethical changes involved in growing up. The book is a worthy younger companion to another of Dickerson's standard sex educational contributions, So Youth May Know, directed to the 16–20 age group.

The new volume can be read profitably by many boys themselves, although some may need parental help in its understanding and interpretation. In fact it will do plenty of parents good to review the author's facts and philosophy if only for a refresher. Already we have recommended the work to one mother with sons of 10 and 14 who sought "a book for me to put at their disposal which stresses a reasonably moral attitude toward sex and yet will not put them on the defensive."

Life's reproductive miracles still require loads of explaining for childish minds. Most youngsters are not as casual as was the neighbor who remarked on that notable February 12 in 1809, "Nothing much happened today. A boy was born over at the Lincolns'."

RAY H. EVERETT

Child Health and the State—By Alan Moncrieff. New York: Oxford University Press (114 Fifth Ave.), 1954. 48 pp. Price, $1.50.

This volume, based on the author's three Newsholme lectures delivered in 1953, seeks to define the responsibility of government toward child health in the welfare state. The author has a wide background of experience as a pediatrician, a welfare medical officer, and as a part-time school medical officer.

The chapter on infant welfare deals with the developments in this field and points up the accomplishments as well as the gaps in the existing service. A strong plea is made for continued child welfare work but with a shift in emphasis toward educational and preventive services. It is interesting to note that in Great Britain the handicapped child from two years of age is the responsibility of the school health services. The second chapter deals with school health and includes consideration of the various types of handicapped children. Criticism of the existing system of routine medical inspection is based on the fact that there still occurs a great deal of school absences. The author pictures the development of the future to be a better integration of school health services and infant welfare and the physician assuming a wider role in the life of the individual school. The discussion of "The Deprived Child" is a straightforward statement of the size and nature of the problem.

In the strong concluding statement on "Parental Responsibility and the State" the author deplores the tendency for the state to serve as "a plain van to take difficulties away" from the parents. The alternative suggested is the strengthening of the family life and inter-family relationships and based on this "a re-emergence of strong community urge."

The author's views are clearly stated and make interesting and valuable reading for those individuals concerned with the health of all children. A great deal of information has been condensed into this small volume.

SIDNEY S. CHIPMAN

Atlas of Exfoliative Cytology—By George N. Papanicolaou, Cambridge, Mass.: Harvard University Press, 1954. Price, $18.00.

This atlas, which is published for the Commonwealth Fund by the Harvard University Press, represents a superb accomplishment by both author and publisher. Dr. Papanicolaou is the pioneer in the field of exfoliative cytology and his vast experience is reflected in the selection of the material for the numerous exquisite color plates. There are 24 plates of colored drawings and 12 plates of photomicrographs in color.

The book is in loose-leaf form and the stated reason for use of this form is that it will permit "the periodic addition of illustrative and descriptive material." In the preface, Dr. Papanicolaou invites investigators to submit rare or unusual cytologic material which might be added to the volume. The loose-leaf form will be appreciated by those who will use the book as a reference in the laboratory and for the teaching of small groups of students.

The book is more than an atlas, and because of this, its utility is broadened considerably. It contains detailed instructions on the collection, processing and staining of the wide variety of biologic materials to which cytologic study has been applied.

The application of exfoliative cytology to the study of cancer, endocrine and metabolic disorders is still new. In cancer detection, its usefulness as a valuable diagnostic tool is already apparent. As methods for the identification of cancer cells improve and become less expensive, its application to survey work will become more feasible. This book is a milestone in the development of this important and rapidly expanding field of cytologic diagnosis.

GUSTAVE J. DAMMIN

You and Your Health—By Edwin P. Jordan. New York: Putnam (210 Madison Ave.), 1954. 296 pp. Price, $3.95.

His three jobs compel the author to Fletcherize his subject matter for use at three levels: teacher of undergraduate medical students; executive director, American Association of Medical Clinics, and for five years associate editor of its journal; and producer of a widely syndicated (NEA) newspaper health column. What marks this book as of special interest to the professional health worker is not so much the subject matter, for this is presented in very simple and elementary fashion, but what was selected, organized, and clothed in attractive language. His newspaper readers helped him immensely in preparing this book for the general public. He used his correspondence with them extensively in writing the 67 pages of questions and answers. Each of the ten chapters closes in this fashion. No ivory tower product, the book reflects everyday reality.

Many subjects of general interest were omitted. This book is just a "feeler." The author states frankly that these will be discussed in a subsequent book if there is sufficient reader interest. If for no other reason than to help offset distorted, exaggerated claims by hucksters of all kinds of products, more books of this type should be encouraged.

W. W. PETER

The Child, His Parents and the Nurse—By Florence G. Blake. Philadelphia: Lippincott (East Washington Square), 1954. 440 pp. Price, $5.00.

Through years of pediatric nursing and teaching students of nursing, Miss Blake has carried on research in libraries, hospital wards, schools, and homes, to discover the factors which promote healthy development and the principles of working with children and their parents. This book represents the results of her study.

Nursing as envisioned by the author demands an orientation to the patient and his family rather than to the procedure. It requires the kind of supervision which helps the student to master the problems of her personal relationships with others and to develop her own skills in working with people. The author believes that an acceptance and understanding of parents is essential in giving help and satisfactory care to their children.

In the first chapter Miss Blake

describes the role of the nurse in preventive mental health programs. This is followed by eight chapters in which the problems are taken up according to age groups. Here the author brings together facts from the broad field of human development and behavior and presents not a new but a broader and deeper philosophy of pediatric nursing than is usually presented. Interesting case material is used to illustrate some of the concepts discussed in the text. The role of the social worker and the nurse in relation to the patient and to each other is brought out in the discussion and in case presentation.

Provocative questions and detailed references are included at the end of each chapter.

Administrators of maternal and child health services, teachers, and supervisors who are ready to set aside tradition and try new methods will find support and guidance in this book. Students in the specialties will realize the scope of opportunity for satisfying service in the field of their choice.

RUTH G. TAYLOR

Add Life to Your Years—By Ernst Boas. New York: McBride (200 East 37th St.), 1954. 278 pp. Price, $3.75.

In this little book, intended for the laity, Dr. Ernst Boas, a scholarly and accomplished physician, has condensed a great deal of instruction. Such instruction regarding the problems of health in the years of later maturity is needed urgently for the greatest handicap to the control, retardation and/or prevention of the chronic degenerative diseases is the sad ignorance of even the so-called "well educated" layman as to his own physiologic functioning. And, as Artemus Ward sagely remarked, it is the type of "ignorance which is not not knowing, but knowing so many things that aint so."

Dr. Boas knows his subject intimately. Everything he presents is sound and well stated. The volume is divided into 17 chapters: of these, five deal with general matters, such as Bodily Changes which Come with Age, General Guides to Healthful Living, Symptoms and Their Interpretation, and Social Attitudes Toward the Aging. The other 12 chapters are résumés of the problems of disease, especially the chronic progressive disorders of senescence organized by systems, such as the cardiovascular, respiratory, and digestive. Quite properly, the cardiovascular problems are given the greatest emphasis; approximately 60 pages in contrast to eight devoted to diabetes mellitus, and only nine pages to nutrition. The emotional stresses and problems of the later years are mentioned, but more in a descriptive fashion than in a manner conducive to better understanding and anticipation, and thus avoidance of destructive reactions.

Dr. Boas is an organicist; he sees disease clearly, but one does not feel that he sees the person as a whole. And yet, the individual is indivisible. The exposition of the facts of chronic illness is excellent; as a guide to anticipatory hygiene or health construction, the volume is inadequate. It may alarm some patients, for the elderly are especially vulnerable to iatrogenic disorders. Perhaps its greatest service will be to members of the family of patients with chronic progressive disorders, in helping them to comprehend the nature of the illness of their loved one.

EDWARD J. STIEGLITZ

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ADMINISTRATION OF PHYSICAL EDUCATION FOR SCHOOLS AND COLLEGES. William L. Hughes and Esther French. New York: Barnes, 1954. 383 pp. Price, $4.50.

BEYOND THE GERM THEORY. Iago Galdston, Editor. New York: Health Education Council, 1954. 182 pp. Price, $4.00.

CHALLENGE OF OUR TIMES, THE. Contemporary Trends in Science and Human Affairs as Seen by 20 Professors, University of Wisconsin. Edited by Farrington Daniels and Thomas M. Smith. Minneapolis, Minn.: Burgess, 1954. 364 pp. Price, $3.50.

CORONARY HEART DISEASE IN YOUNG ADULTS —A MULTIDISCIPLINARY STUDY. Menard M. Gertler and Paul D. White. Cambridge, Mass.: Harvard University Press, 1954. 218 pp. Price, $5.00.

DEAF AND THEIR PROBLEMS, THE. Kenneth W. Hodgson. New York: Philosophical Library, 1954. 364 pp. Price, $6.00.

ECONOMIC PROBLEMS OF RETIREMENT. A Report on the Fourth Annual Southern Conference on Gerontology, University of Florida, January 27–28, 1954. Gainesville, Fla.: University of Florida Press, 1954. 180 pp. Price, $2.50.

EDUCATION ON THE AIR. 23rd Yearbook, Institute for Education by Radio and Television. Edited by O. Joe Olson. Columbus, Ohio: Ohio State University, 1953. 343 pp. Price, $4.00.

ELEMENTS OF FOOD ENGINEERING (Vol. 2). Milton E. Parker; E. S. Harvey; and E. S. Stateler. New York: Reinhold, 1954. 360 pp. Price, $8.50.

ENDEMIC GOITER—THE ADAPTATION OF MAN TO IODINE DEFICIENCY. John B. Stanbury, et al. Cambridge, Mass.: Harvard University Press, 1954. 209 pp. Price, $4.00.

FAMILY HEALTH MAINTENANCE DEMONSTRATION, THE. New York: Milbank Memorial Fund, 1954. 251 pp. Price, $2.00.

FIFTY YEARS OF TECHNICAL ASSISTANCE. Some Administrative Experiences of U. S. Voluntary Agencies. Edwin A. Bock. New York: Public Administration Clearing House, 1954. 65 pp. Price, $1.50.

HANDBOOK OF DIABETIC CHILDREN. Alfred E. Fischer and Dorothea L. Horstmann. New York: Intercontinental Medical Book Corp., 1954. 64 pp. Price, $1.75.

HANDBOOK OF GRAPHIC PRESENTATION. Calvin F. Schmid. New York: Ronald Press, 1954. 316 pp. Price, $6.00.

HANDBOOK OF TROPICAL DERMATOLOGY AND MEDICAL MYCOLOGY. Vol. II. R. D. G. Ph. Simons, Editor. Houston, Tex.: Elsevier Press, 1954. 1705 pp. Price, $15.00.

HEALTH AND SAFETY FOR YOU. Harold S. Diehl and Anita D. Laton. New York: McGraw-Hill, 1954. 515 pp. Price, $3.76.

HEALTH FOR EFFECTIVE LIVING. A Basic Health Education Text for College Students. Edward B. Johns; Wilfred C. Sutton; and Lloyd E. Webster. New York: McGraw-Hill, 1954. 473 pp. Price, $4.75.

IMPAIRMENT STUDY 1951. Chicago, Ill.: Society of Actuaries, 1954. 300 pp. Price, $7.50.

INTO THE FREEZER AND OUT. Donald K. Tressler; Clifford F. Evers; and Barbara Hutchings Evers (2nd ed.). New York: Avi Publishing, 1953. 246 pp. Price, $3.75.

INTRODUCTION TO BACTERIAL PHYSIOLOGY, AN. Evelyn L. Oginsky and Wayne W. Umbreit. San Francisco, Calif.: W. H. Freeman, 1954. 404 pp. Price, $7.25.

MACMILLAN MEDICAL DICTIONARY, THE. New York: Macmillan, 1954. 471 pp. Price, $6.95.

MAN ABOVE HUMANITY. A History of Psychotherapy. Walter Bromberg. Philadelphia, Pa.: Lippincott, 1954. 342 pp. Price, $5.75.

MEDICINE AND SCIENCE. New York Academy of Medicine Lectures to the Laity. Iago Galdston, Editor. New York: International Universities Press, 1954. 159 pp. Price, $3.00.

MICROBES AND YOU. Stanley E. Wedberg. New York: Macmillan, 1954. 439 pp. Price, $4.50.

MICROTOMIST'S FORMULARY AND GUIDE, THE. Peter Gray. New York: Blakiston, 1954. 794 pp. Price, $10.50.

MICROBIOLOGY OF MEATS. Lloyd B. Jensen (3rd ed.). Champaign, Ill.: Garrard Press, 1954. 422 pp. Price, $6.00.

MUNICIPAL YEAR BOOK, THE. 1954. Clarence E. Ridley and Orin F. Nolting, Editors. Chicago, Ill.: International City Managers' Assn., 1954. 613 pp. Price, $10.00.

NEW ENGLAND CONFERENCE ON FIELD TRAINING FOR GRADUATE STUDENTS IN HEALTH

EDUCATION (REPORT). Northampton, Mass., October 15, 1953. Boston, Mass.: Massachusetts Department of Public Health, Divisions of Training and Health Information, 1954. 33 pp.

NUTRITIONAL FACTORS AND LIVER DISEASES Vol. 57, Art. 6. Klaus Schwarz, et al. New York: New York Academy of Sciences, 1954, pp. 615–962. Price, $4.50.

PNEUMOCONIOSIS ABSTRACTS Vol. II—1939–1950. Reprint from the Bulletin of Hygiene, Bureau of Hygiene and Tropical Diseases. New York: Pitman, 1954. 518 pp. Price, $17.50.

PROCEEDINGS—1953 ANNUAL MEETING OF THE ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, NOVEMBER 4–7, WASHINGTON, D. C. Indianapolis, Ind.: Association of State and Territorial Health Officers.

PROGRESS AND PROBLEMS IN MENTAL HOSPITALS. Proceedings of the 5th Mental Hospital Institute American Psychiatric Association, Mental Hospital Service. Washington, D. C.: American Psychiatric Assn., 1953. 204 pp. Price, $2.50.

REPORT ON TAIWAN'S POPULATION TO THE JOINT COMMISSION ON RURAL RECONSTRUCTION. George W. Barclay. Princeton, N. J.: Princeton University Press, Office of Population Research, 1954. 120 pp. Price, $2.50.

SEVENTY-FIVE YEARS OF MEDICAL PROGRESS 1878–1953. Louis H. Bauer, Editor. Philadelphia, Pa.: Lea & Febiger, 1954. 286 pp. Price, $4.00.

SOCIAL SCIENCE IN MEDICINE. Leo W. Simmons and Harold G. Wolff. New York: Russell Sage Foundation, 1954. 254 pp. Price, $3.50.

STUDY ON ADOPTION OF CHILDREN. United Nations, Department of Social Affairs. New York: Columbia University Press, 1953. 104 pp. Price, 75 cents.

SURGERY OF PULMONARY TUBERCULOSIS. James H. Forsee. Philadelphia, Pa.: Lea & Febiger, 1954. 208 pp. Price, $6.50.

TREATMENT OF THE ALCOHOLIC, THE. Fritz Kant. Springfield, Ill.: Thomas, 1954. 130 pp. Price, $3.50.

WORKERS' HOUSING ECONOMIC AND SOCIAL SURVEY ACTIVTIIES OF THE I.L.O. REPORT OF THE DIRECTOR-GENERAL. Washington, D. C. International Labor Office, 1954. 144 pp. Price, $1.00.

A Selected Public Health Bibliography with Annotations

"Coronary" Leads Them All—In a hazy and general sort of way most health people know that trends in heart disease have been downward—from rheumatic fever and syphilis origins—and decidedly upward—as the result of hypertension and arteriosclerosis. The pyramidal incidence tables, of the latter sources, presented with this paper are something all should see.

ANON. The Pattern of Heart Disease Mortality. Statist. Bull. Metrop. Life Insur. Co. 35, 5:1 (May), 1954.

Laying Up Against the Future—Though the suggestions here for providing for old age are addressed to practicing physicians who, hopefully, will enjoy incomes greater than those of most health people the good advice about "estate" planning applies to our more modest station in life also.

APPLEMAN, J. A. Economic Security for the Physician. New England J. Med. 250, 19: 812 (May 13), 1954.

American-Way Preservers Will Doubt This—With disarming objectivity a pediatrician reports upon the (British) National Health Service, concluding that it "is proving a success and has been good for medicine in general and pediatrics in particular."

CRAIG, J. The British National Health Service. Pediatrics 13, 5:488 (May), 1954.

Eternal Vigilance—Those among us who see tomorrow's public health as essentially concerned with human social problems—and therefore are just a little inclined to look down the nose at poor, prosaic environmental sanitation—will do well to ponder over this record. As long as our country continues to endure 200-odd water, milk or food-borne outbreaks of disease annually, involving more than 10,000 victims, we would seem to have plenty to do along the well worn "ruts" before devoting too much of our energies to new "social" ventures.

DAUER, C. C., and SYLVESTER, G. 1953 Summary of Disease Outbreaks. Pub. Health Rep. 69, 6:538 (June), 1954.

Worth Many Repetitions—"The tool with the greatest value in the health counselling program is the spoken word, whether it is used by the staff nurse for one patient or by the medical director for 100 employees in a group session." This is from a first-hand account of the Oak Ridge industrial health service.

FELTON, J. S. Guiding Employees Toward Better Health. Am. J. Nursing 54, 6:727 (June), 1954.

Personality, Not Gadgets, Gets Results—"A perfect mastery of flannel board and other visual-aid technics (and) of group dynamics and conference method . . . (does) not procure for the health educator the solution of apparently simple health problems. Health education not supported by extensive knowledge of emotional factors, and whose expounder is not the possessor of a mature personality, will fail to give . . . the correct answer to crucial questions." This sage advice comes from overseas.

KOEKEBAKKER, J. Mental Health Implications of Health Education. Health Ed. J. 12, 2:80 (Apr.), 1954.

Persisting Immunity—What percentage of military recruits have positive Schick tests, give primary responses to vaccination, or possess antibodies against mumps, Q fever, brucella, or influenza? If an answer to any part of this question is of immediate moment in your job, then you have a useful series of papers to watch out for. The first two are here.

LIAO, S. J., et al. Immunity Status of Military Recruits in 1951 in the United States. Am. J. Hyg. 59, 3:262 (May), 1954.

This Is About Talk—Seven papers discussing various kinds of meetings and the mechanics involved in each may have something to say to public health people plagued with problems of what to do about the meetings thrust upon them. The following questions are worked over. Shall we use a speaker? Or a panel? A play? Or a film-based program? Or something else?

LEWIS, E. J., et al. Workshop on the Single Shot Meeting. Adult Leadership 3, 2:11 (June), 1954.

Chronics Not Just "Old Folks"—What the representatives of the APHA, and four other founders of the Commission on Chronic Illness, had to say to the National Conference called to make recommendations about health services for prolonged-care patients is excellently reported. Did you know that three-quarters of all the chronically ill are still in their "productive years"—under age sixty-five?

MAYO, L. W., et al. The Care of the Long-Term Patient. Pub. Health Rep. 69, 6:553 (June), 1954.

One in Six Saw the Doctor—Records were kept of all the acute illnesses occurring in two suburban communities. If you would like to know what families get most medical care, or whether men, women or children go to

the doctor most often, then you will find a mine of information here.

MERTZ, J. C. Medical Care for Acute Respiratory Illness in Two Communities in New York State. Milbank Mem. Fund Quart. 32, 2:141 (Apr.), 1954.

How Upper-Crust Schools Do the Job—School health services in a commuter's paradise, where expense is no object, are described completely enough so that struggling services in penny-pinching towns may be matched against that of an open-handed neighbor.

MILLER, J. L. School Health Services and Health Instruction in Great Neck, Long Island. J. School Health 24, 5:127 (May), 1954.

Limited Coverage—One per cent of the symptom-free persons attending a city cancer detection clinic were found to have cancer on the first examination. Though home screening for cervical cancer, and self-examination for breast cancer, plus streamlined clinic methods reduced the time for each examination, accumulating re-examinations soon make the clinic practically a "closed" facility.

ROSENTHAL, T., and OPPENHEIM, A. Evaluation of Cancer Prevention—Detection Centers. J.A.M.A. 155, 6:538 (June 5), 1954.

Epidemiologic Item—In a city-wide study of polio in households a difference was noted in the hazard of contact with paralytic and nonparalytic cases. If the initial case were paralytic others following it were more likely to be paralytic and to present a greater case fatality rate. More here that you will want to know about.

SIEGEL, M., and GREENBERG, M. The Risk of Paralytic and Nonparalytic Forms of Poliomyelitis to Household Contacts. J.A.M.A. 155, 5:429 (May 29), 1954.

They Take What They Need—This study is mostly of interest to maternal and child hygienists and nurses but it will not hurt for all to know that maternal weight gain has no important effect on the size of the baby. Other useful findings are here, in matters of prenatal nutrition.

WIEHL, D. G., and TOMPKINS, W. T. Size of Babies of Obese Mothers Receiving Nutrition Supplements. Milbank Mem. Fund Quart. 32, 2:125 (Apr.), 1954.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Adult Leadership, Adult Education Association of the United States, 743 N. Wabash Ave., Chicago 11, Ill.
Am. J. Nursing (American Journal of Nursing), 2 Park Ave., New York 16, N. Y.
Am. J. Hyg. (American Journal of Hygiene), 615 N. Wolfe St., Baltimore 5, Md.
Health Ed. J. (Health Education Journal), Tavistock House, Tavistock Sq., London, W.C. 1, England.
J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.
J. School Health (The Journal of School Health), American School Health Association, 3335 Main St., Buffalo 14, N. Y.
Milbank Mem. Fund Quart. (The Milbank Memorial Fund Quarterly), 40 Wall St., New York 5, N. Y.
New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.
Pediatrics (Journal of the American Academy of Pediatrics), 636 Church St., Evanston, Ill.
Pub. Health Rep. (Public Health Reports), Superintendent of Documents, Gov. Ptg. Office, Washington, D. C.
Statist. Bull., Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

Association News

EIGHTY-SECOND ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
BUFFALO, N. Y., OCTOBER 11–15, 1954

Food and Nutrition Misinformation

By way of meeting its responsibilities as a special section, the Food and Nutrition Section is studying the problem of misleading information on food and nutrition. A committee, made up of Robert S. Goodhart, M.D., chairman, Bertlyn Bosley, Ph.D., and Frederic W. Nordsiek, has sent a questionnaire to Section members through which it hopes to obtain information on the areas of misinformation, what its injurious effects are, and the media through which it is spread. The analysis of the returns will "help assure that the committee gives proper attention to this problem of prime importance."

Medical Care Section

The New England members of the Medical Care Section, APHA, met at the Harvard School of Public Health on June 15, with Franz Goldmann, M.D., chairman of the Section, presiding. Thirty persons attended the conference. Henry G. Bakst, M.D., discussed "Home Care for Patients with Heart Disease: Experience"; P. Joseph Pesare, M.D., "Dental Service for Public Assistance Recipients in Rhode Island"; and Mildred A. Morehead, M.D., "The Quality of Medical Care at the Health Insurance Plan of Greater New York."

A New Medical Care Bibliography

"The Quality of Medical Care: Concepts, Standards, Methods of Evaluation and Improvement," has been published by the Subcommittee on Medical Care of the Committee on Administrative Practice, the ninth in a series of annotated bibliographies prepared by the staff. It includes more than 150 references, with a major focus on administrative technics for the control, evaluation, and improvement of the quality of medical care. It is intended for distribution to medical care administrators and other individuals with a special interest in this field.

Single copies free from the subcommittee at 321 Congress Avenue, New Haven 11, Conn. Copies of earlier compilation on organized home care programs may also be obtained upon request.

Newly Elected Officers of Affiliated Societies

Arizona—Officers elected for the calendar year, 1955 are:

President: L. J. Lull, M.D., area medical consultant, Bureau of Indian Affairs, Phoenix
President-Elect—George H. Parker, Navajo County Health Department, Winslow
Vice-President—Helen C. Rotthaus, State Department of Health, Phoenix
Secretary—Virginia E. Redondo, State Department of Health
Treasurer—Emma Gupton, State Department of Health

Connecticut

At the annual meeting of the Connecticut Public Health Association, held in Meriden, May 13, Leonard Parente,

M.D., president of the association, announced the establishment of the C.-E. A. Winslow Award to be conferred by the Connecticut Public Health Association on an individual, department, or organization selected for outstanding contributions to public health. The award will be made annually beginning in 1955 on recommendation of a special award committee.

New officers elected are:

President—Dorothy Wilson, Ed.D., R.N., executive director, Visiting Nurse Association of New Haven
President-Elect—William H. Upson, M.D., health officer, Suffield
Vice-President—Edward M. Cohart, M.D., associate professor of public health, Yale University, New Haven
Secretary—Irma Bichusen, R.N., state service director, American Cancer Society, Connecticut Division, New Haven
Treasurer—Eloise H. Heath, Ph.D., executive director, Tuberculosis League of Waterbury
Delegate to the APHA—Harold S. Barrett, M.D., deputy commissioner, Connecticut State Department of Health, Hartford

Missouri

President—A. R. Baron, public health engineer, State District Health Office No. 6, Poplar Bluff
President-Elect—Ralph E. Duncan, M.D., director, Duncan Laboratories, Kansas City
Vice-President—John McCutchen, director of food and drugs, State Division of Health, Jefferson City
Representative to Governing Council, APHA—J. Earl Smith, M.D., director, St. Louis Division of Health

New Mexico

President—Ryan Pierson, senior bacteriologist-serologist, State Mobile Laboratory, Albuquerque
President-Elect—Duane L. Sewell, Silver City
Vice-President—Beatrice Chauvenet, Santa Fe
Secretary-Treasurer—Mary M. Gilliland, executive assistant, Maternal and Child Health Division, State Department of Health
Librarian—Helen M. Boss, administrative assistant, State Public Health Laboratory
Delegate to APHA Governing Council—Portia Irick, Santa Fe
Representative to Western Branch, APHA—Grace Hull

North Dakota

President—Hal Neuberger, Fargo
President-Elect—Carlyle Onsrud, executive director, Public Welfare Office, Bismarck
Vice-President—Vera Knickerbocker, director of public health nursing, State Department of Health
Secretary-Treasurer—Lois S. Williamson, dental hygienist, State Department of Health

Tennessee—This association has changed its meeting date from May to December and will hold its 1954 meeting from December 13–15.

President—J. W. Erwin, M.D., director, Sullivan County Health Department, Blountville
President-Elect—Monroe F. Brown, M.D., assistant commissioner, Tennessee Department of Public Health, Nashville
Vice-President—Frank L. Roberts, M.D., associate dean, College of Medicine, University of Tennessee, Memphis
Secretary-Treasurer—C. B. Tucker, M.D., director, Division of Preventable Diseases, Tennessee Department of Public Health

Washington

President—Clarice Pittman, public health nursing supervisor, Chelan-Douglas Health District, Wenatchee
President-Elect—Robert G. Beaumier, administrative officer, State Department of Health, Seattle
Vice-President—Edythe Tucker, Washington Tuberculosis Association, Seattle
Treasurer—Caesar Branchini, health educator, Richland Health Department
Secretary—John E. Van Amburgh, director of sanitation, Seattle-King County Department of Public Health

West Virginia

President—Isabelle Rasel, public health nurse, Wood-Parkersburg Health Department
1st Vice-President—Walter Bowman, senior serologist, State Hygienic Laboratory, Charleston
2nd Vice-President—Roger A. Kennedy, M.D., Monongalia County health officer, Morgantown
Treasurer—Margaret Crouch, State Department of Health, Charleston

Representative to Governing Council APHA—Guy R. Post, M.D., health officer, Parkersburg-Wood County

Public Health Association of New York City—The following officers were elected at the recent annual meeting:

President—Duncan W. Clark, M.D., professor and chairman of the Department of Environmental Medicine and Community Health, State University College of Medicine, Brooklyn

The other officers, each on the staff of the New York City Health Department are:

Vice-President—Helen M. Wallace, M.D., director, Bureau for Handicapped Children
Secretary-Treasurer—Abe A. Brown, assistant director, Bureau of Public Health Education
Representative to Governing Council, APHA—Louis Weiner, Chief of Statistics and Tabulation, Bureau of Records and Statistics

Evaluating School Health Services

The Evaluation Committee of the School Health Section of the American Public Health Association, in cooperation with the American Association for Health, Physical Education, and Recreation, and the Amercian School Health Association, is developing a consultation service in program evaluation for school health.

The consultants who have been appointed to assist in planning evaluation studies are:

Ruth Abernathy, Ph.D., M.A., associate professor of physical education, University of California, Los Angeles
H. F. Kilander, Ph.D., professor of education, New York University
Bernice Moss, professor of health education, University of Utah
Dorothy Nyswander, Ph.D., professor of health education, School of Public Health, University of California
Marjorie Phillips, professor of health education, Southern Illinois University
Marie Swanson, R.N., M.A., assistant director, National League for Nursing, and consultant in nursing, Professional Examination Service, American Public Health Association
G. G. Wetherill, M.D., director of school health services, Board of Education, San Diego, Calif.

The committee has assembled copies of evaluation tools such as checklists and other forms proved useful in the evaluation of school health programs. Readers are invited to send copies of other such materials and reports of evaluation studies to the chairman or to examine those already available. Mimeographed copies of "Research Underway and Research Needed" are available from the AAHPER.

The committee would appreciate suggestions as to effective uses of its services.

Suggestions, materials, and requests for service should be sent to the chairman, Wesley P. Cushman, Ohio State University, Columbus, Ohio.

APHA membership application blank on page XXIII

82nd ANNUAL MEETING

HOW TO MAKE HOTEL RESERVATIONS FOR THE BUFFALO ANNUAL MEETING

A HOUSING BUREAU will be operated by the Buffalo Convention Bureau for the 82nd Annual Meeting of the APHA in Buffalo, October 11–15. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible on the form below.

Hotels and Rates

Hotel	Single	Double	Twin
Buffalo—Washington & Swan Sts.	$4.00– 6.50	$7.00– 9.50	$ 9.00–10.00
Graystone—Johnson Pk. & Delaware	2.50– 6.50	4.50– 9.50	6.50– 9.50
Lafayette—Washington & Clinton	5.25– 9.00	8.00–14.00	10.00–13.00
*Markeen—Main at Utica	3.50– 5.50	5.50– 8.50	8.00– 9.00
Midtown—430 Delaware Ave.	3.25– 5.00	5.50– 7.75	7.75– 8.00
Lenox—North Near Delaware	6.00– 8.00	8.50–12.00	9.00–14.00
*Richford—210 Delaware Ave.	3.00– 4.50	5.00– 8.00	6.00– 8.00
Sheraton—715 Delaware Ave.	5.85– 9.35	9.35–10.00	8.85–12.85
Statler—Delaware Ave. at Niagara Sq.	5.50–10.00	8.00–13.00	10.00–16.00
Stuyvesant—245 Elmwood Ave.	6.00–10.00	9.00–16.00	10.00–18.00
*Touraine—274 Delaware Ave.	5.00– 8.00	7.50– 9.00	8.50– 9.00
Westbrook—675 Delaware Ave.	5.00– 8.00	8.00– 9.00	10.00–12.50
Worth—200 Main St.	2.75– 4.50	4.75– 6.50	7.50
*Genessee—308 Pearl St.	2.50– 4.00	5.00– 6.50	7.00

* In addition to Private Baths these Hotels also have rooms with adjoining baths, or without baths.

Rates for Suites available on request.

HOTEL RESERVATION FORM

MAIL TO: Mrs. Evelyn McCarthy, Housing Bureau
155 Franklin Street, Buffalo, N. Y.

PLEASE MAKE RESERVATIONS NOTED BELOW: (Please Print or Type.)

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City Zone State

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Public Health Physicians—Several positions open in active general public health programs in New Mexico. $9,000–$10,500 plus travel allowances. Gerald R. Clark, M.D., Director, New Mexico Department of Public Health, Santa Fe, N. M.

District Health Officer—Baker-Union Counties in northeastern Oregon, gateway to the "Switzerland of America." M.D. plus M.P.H. required. $10,000 to start. Social Security and state retirement coverage; under Merit System. A. T. Johnson, Merit System Supervisor, Oregon Merit System Council, P. O. Box 231, Portland 7, Ore.

Health Officers—Immediate vacancies exist in Maryland for deputy state health officers. Requires M.D., with master's degree in public health or five years of public health experience. Starting salary $8,100 a year. Commissioner of Personnel, 31 Light St., Baltimore 2, Md.

Assistant Public Health Officer and Public Health Physician—California license required. Board certification or eligibility desirable for health officer. Immediate appointment. Graduate training or public health experience required for physician. Salary open. Kern County Dept. of Public Health, C. F. Baughman, Public Health Business Manager, P. O. Box 997, Bakersfield, Calif.

Public Health Physician—Health officer for established county health department of 32,000 in south central Illinois. $7,000–$9,000 plus travel allowance. C. H. Zoller, M.D., President, Board of Health, 403 N. Montgomery Ave., Litchfield, Ill.

County Health Officer and Deputy State Health Officer—Montgomery County, Md. Salary open. State salary $8,108–$9,728 supplemented by county. Minimum qualifications: Graduation from a Class A medical school with eligibility for, or possession of, a license to practice medicine in Maryland and M.P.H. degree. Five years' experience in public health administration required. County Office Building, Rockville, Md.

Medical Health Officers—with formal training or recognized experience, as directors of local health departments. $9,168 with merit increases to $10,032. Must be American citizens, under fifty years of age, and eligible for licensure in Virginia. Director of Local Health Services, Virginia State Dept. of Health, Richmond 19, Va.

Medical Health Officers—several for local departments. M.P.H. degree or board certification required. Salary range $8,400–$8,700 plus travel allowance. Henry A. Holle, M.D., State Health Officer, Austin, Tex.

Health Director—Lenawee County in southeastern Michigan. Population 63,000. Well organized staff. New health unit office being constructed. Position now open. Mayor Claude E. Porter, Chairman, Lenawee Co. Health Dept., 119 W. Church St., Adrian, Mich.

Director of Maternal and Child Health—in a State Department of Health. M.D. degree; M.P.H. or extensive public health experience in maternal and child health or public health, $8,100–$9,120. R. O. Saxvik, M.D., State Health Officer, State Dept. of Health, Bismarck, N. D.

Disease Control Director—Denver, Colo., Department of Health and Hospitals. Direct programs for investigation and control of communicable and noncommunicable diseases and the analysis of factors influencing disease in an agency providing public health and medical care services. Minimum requirements: M.D., eligible for license in Colorado; one year graduate study leading to M.P.H. degree; three years' progressively responsible experience in epidemiology and disease control in a public health department. Salary range $7,800–$10,020. Send statement of training and experience to Personnel Office, Dept. of Health and Hospitals, W. 6th Ave. and Cherokee St., Denver 4, Colo.

Public Health Educator—Denver, Colo., Department of Health and Hospitals. New position, professional public health education work in an agency providing public health and medical care services. Minimum requirements: M.P.H. in public health education, and two years' experience as a public health educator or in related work. $4,596–$5,748. Personnel Office, Dept. of Health and Hospitals, W. 6th Ave. and Cherokee St., Denver 4, Colo.

Public Health Educator—New position in city health department. Desire college graduate with specialization and experience in public health education. $4,661–$5,846. Dept. of Personnel, City Hall, Dearborn, Mich.

Health Educator—full responsibility in case-finding program. Work closely with official health agency. B.S. and experience as health educator required, and car required. $3,800–$5,000 plus travel allowance. Mrs. Ruth K. Graham, Executive Director, Anti-Tuberculosis League of Norfolk, Inc., 301 W. York St., Norfolk 10, Va.

Health Educator—Demonstration health center, voluntary agency in process of expansion, cooperating closely with Philadelphia Department of Public Health. Salary $6,500. M.P.H. or master's required plus at least three years' experience in official or voluntary health agency. Retirement plan plus social security. Opportunity for participation in medical student teaching program.

Public Health Statistician—to conduct project in demonstration health center, voluntary agency in process of expansion, cooperating closely with Philadelphia Dept. of Public Health. Salary $7,000. Master's degree required, together with at least four years' experience, preferably on local level. Retirement plan plus social security. Bernard M. Blum, M.D., Director, Fife-Hamill Memorial Health Center, 7th and Delancey Sts., Philadelphia 6, Pa.

Public Health Analyst — $322–$392. Joseph T. Nardo, M.D., Health Officer, Santa Barbara County Health Dept., P. O. Box 119, Santa Barbara, Calif.

Field Representative—for a commercial organization well known in public health. Experience in food sanitation necessary. Position requires extensive travel in United States. Headquarters in New York. Salary commensurate with training and experience. Preferred age 40–60. **Box S-23,** Employment Service, APHA.

Sanitarian—Five-county District Health Unit. Salary depends on experience and qualifications. Merit System and O.A.S.I.S. Position available immediately. Cecil C. Smith, M.D., District Health Officer, Custer District Health Unit, P. O. Box 185, Mandan, N. D.

Public Health Engineer—$6,000–$6,900. Master's degree in sanitary or public health engineering with one year of experience in a public health agency required. Milwaukee City Service Comm., City Hall, Milwaukee, Wis.

Sanitary Engineer—to direct Division of Sanitation with generalized programs in well established County Health Department, Cattaraugus County Health Dept., 302 Laurens St., Olean, N. Y.

Sanitary Engineers—for state health department work. Headquarters in Louisville. $5,760–$6,720. Experience in sanitary engineering necessary. Travel expenses plus 7 cents a mile for use of car. Merit System Office, Kentucky State Dept. of Health, 620 S. Third St., Louisville, Ky.

Sanitary Engineer—County Health Department serving population of 125,000. Degree in sanitary engineering, or civil engineering (sanitary engineering option) and some experience required. $4,265 plus travel allowance. Health Officer, P. O. Box 626, Annapolis, Md.

Medical Social Consultant — County Health Department serving approximately 125,000. Degree in recognized school of medical social work and at least two years' experience in medical social work required. Travel allowance and retirement benefits. Health Officer, P. O. Box 626, Annapolis, Md.

Research Director—to develop an active research program for the Saratoga Spa at Saratoga Springs, N. Y. Ph.D. with experience in physiology. Knowledge of biochemistry also useful. Permanent New York State Civil Service position (C-27 with salary of $6,562–$7,992). Possible appointment to teaching staff of Albany Medical College. Dr. Frank W. Reynolds, Medical Director, The Saratoga Spa, Saratoga Springs, N. Y.

Chemist—$400–$475. B.S. in chemistry plus two years' experience in chemical laboratory, or master's degree, plus one year's experience. John M. Posegate, Supervisor, Merit System Council, 429 Arizona State Office Bldg., Phoenix, Ariz.

Nutritionist—Vacation in Vermont? Why not live there? Staff worker for general nutrition program in state agency. $3,016–$3,692 plus mileage and travel expenses. Personnel Officer, Dept. of Health, 115 Colchester Ave., Burlington, Vt.

Physical Therapists—for state program for physically or mentally handicapped children in schools and hospitals in various locations. All positions require graduation from recognized PT school and minimum one year experience. Salary ranges $310–$358, $341–$415, or $358–$436, depending on classification. Write before September 10 to Recruitment Section, State Personnel Board, 1015 L St., Sacramento 14, Calif.

Veterinarian—to direct milk, meat and food programs. $6,000 plus allowances. Must be under 35. Public health experience de-

sired but not essential. Walter E. Kruse, M.D., City Health Comm., Fort Wayne, Ind.

Public Health Physician—as health officer for established county health department of 37,000 in northwestern Illinois. Salary range $7,200–$9,000 plus travel allowance. Qualified physician may start above the minimum. President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

Executive Director—for well established "Combination Agency," Visiting Nurse Association (Division P.H.N. Omaha-Douglas County Health Dept.). Population 300,000. Salary open. Generalized program, staff 42, affiliating students. Four weeks vacation, social security, pension plan. Mrs. W. B. Millard, VNA, 1201 S. 42 St., Omaha 5, Neb.

Public Health Nurses (3)—for generalized program in Minnesota County. Certificate in public health not essential, but preferred. $3,240–$3,840. Car allowance $.07½ a mile. Janice Maltby, Coordinator, Stearns County Public Health Nursing Service, Courthouse, St. Cloud, Minn.

Public Health Nurses ($275–$375) and Graduate Nurses ($240–$330)—New Mexico Dept. of Public Health. Merit System Supervisor, P. O. Box 939, Santa Fe, N. M.

Public Health Nurses (2)—One for desert area $360; and one near San Bernardino $327. Eligibility for California registration and a car required. County Civil Service Office, 236 Third St., San Bernardino, Calif.

Public Health Staff Nurses—generalized program in County Health Department, north San Joaquin Valley, Calif. $318–$385 at fifth year. Hospital insurance in effect. Certificate in Public Health Nursing and California driver's license required. George F. O'Brien, M.D., County Health Officer, P. O. Box 1607, Modesto, Calif.

Public Health Nursing Supervisor—with college degree and experience in supervision, preferably in both official and voluntary agencies. $3,750, $.06½ a mile travel, O.A.S.I.S. and 15 days sick leave. S. D. Sturkie, M.D., Director, Joint Health Dept., Charlottesville, Va.

Supervising Nurse—with public health training. Staff—10 nurses. Positions available August 15, 1954. V. K. Volk, M.D., Saginaw County Health Dept., 1501 N. Michigan Ave., Saginaw, Mich.

Supervising Nurse—Require public health nursing certificate and three years' experience. General program, 4 nurses on staff. $340. College town. Carl W. Hammer, M.D., City-County Health Dept., Bozeman, Mont.

Public Health Nurse—for generalized program in county of 37,000; 100 miles west of Chicago. Car essential. $235–$300 with travel allowance of $65 per month, 3 weeks vacation. President, Lee County Board of Health, 123 E. First St., Dixon, Ill.

Sanitarian — (California registration) $327–$397. Write County Civil Service, 236 Third St., San Bernardino, Calif.

Public Health Physician (Maternal and Child Health) in the Wayne County Health Department. Population 600,000 (exclusive of Detroit) $10,418–$11,018. Diagnoses and treats children's diseases, consults with private physicians and hospitals, is consultant in the pediatrics division of the County Hospital, and administers an educational program among lay groups. Citizen, not over 60 and at least one year's residence in obstetrics or pediatrics in an approved hospital. Michigan license to practice medicine will be required at time of appointment. Wayne County Civil Service Commission, 200 Cadillac Tower, Detroit 26, Mich.

Public Health Officer. Eastern North Carolina county of 55,000 population. New Health Center, excellent staff. Salary up to $9,600. Dr. H. W. Stevens, City & County Health Center, Wilson, N. C.

Sanitarian for broad program of community sanitation in health department of city of 77,000. $346–$389 plus hospital and surgical insurance and retirement benefits. Commissioner of Health, 730 Washington Avenue, Racine, Wis.

Public Health Bacteriologist. Minimum requirements: A.B. or B.S. from university approved by California State Department of Public Health, and six months as junior in public health laboratory or year in clinical or hospital laboratory. Must hold public health bacteriologist's certificate. $308 per month. Dr. H. E. Robins, Director, Santa Cruz County Hospital, Santa Cruz, Calif.

Staff Public Health Nurse in city health department. California state registration required. $328–$393 monthly. Must own car—mileage allowance paid. Civil service position and under State Retirement Act. Applicant must establish residence here upon employment. James W. Moreland, M.D., City Health Officer, Room 110, City Hall, 426 Third Street, San Bernardino, Calif.

Public Health Nurse—generalized program. $312 or $351 per month depending on qualifications. Car furnished. Mrs. Mary Burrell, Supervising Nurse, Department of Public Health, 18 S. Perry Street, Pontiac, Mich.

POSITIONS WANTED

Public Health Educator — B.S. and M.S.P.H.E., Columbia. Three and one-half years' experience in health education, community organization, social recreation, and teaching. Seymour Reiff, 83-57 118 St., Kew Gardens 15, N. Y.

Biophysicist—Ph.D., 36, interested in radioactive isotopes, physical biochemistry, new methods in clinical chemistry, teamwork in clinical and medical research, seeks responsible position. Presently assistant director, laboratories, midwestern medical center. **Box L-39,** Employment Service, APHA.

Bacteriologist—Ph.D., 30, married. Experience in teaching, research, and medical bacteriology. At present doing research in large eastern medical school, desires public health work or academic appointment. No geographical limitations. **Box L-40,** Employment Service, APHA.

Vocational Rehabilitation Specialist—M.A. (June 1954—N.Y.U.) in rehabilitation. B.A. in psychology. Varied experience with state-federal, and private rehabilitation agencies. Desires position with private or official rehabilitation organization. **Box M-13,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Commissioner, state health department; considerable experience required. (b) Public health physician, preferably Diplomate, to serve as chief of staff, foreign operations, large industrial company. (c) Assistant professor public health; university medical school; full-time position. (d) Medical officers, public health nurses, health educators, sanitarians; foreign assignments; knowledge of Spanish, French, or Portugese required. (e) School nursing consultant; state health department; West. (f) Instructor in public health nursing; eastern university. (g) Public health nurse to direct school health program; residential town near Chicago. (h) Staff and supervisors, county health department; Southern California; cars provided. (i) Health educator; newly created post; should be qualified to organize program of wide scope; $600; Pacific Coast. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

OPPORTUNITIES WANTED

(a) Public health physician; M.P.H.; Johns Hopkins; 17 years' public health experience. (b) Public health nursing administrator; M.A.; six years, director nursing, state health department. (c) Health educator; M.S.P.H.; four years' teaching; three years' health educator, metropolitan health department. (d) Sanitary engineer; B.S.; six years, sanitary engineer state department of health. Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

News from the Field

WHO News

UNICEF Around the World

Status of Government Contributions—As of early June, 23 governments had contributed a total of more than $2,500,000 to UNICEF for the calendar year 1954. The amount at that time was less than one-fifth of the total contributed for the calendar year 1953.

The United States contribution for 1954 has not yet been voted by Congress. Several factors indicate a reduced contribution. First, Congress is considering a basic contribution of $9,000,000 which is nearly $1,000,000 less than the 1953 United States contribution. In addition, the administration has recommended a ceiling for United States government contribution of 60 per cent of the total contributed by all governments, without taking account of sums contributed by governments for projects in their own countries. It has been estimated by the U. S. Committee for UNICEF that carrying out this recommendation will reduce the United States contribution by some $3,000,000. A full discussion of this situation is found in an editorial in the New York Times of May 30—"Congress and the Children." Since 1947 when UNICEF first solicited funds from governments the number of contributing governments has increased steadily, 35 governments contributing $9,851,000 in 1951; 39 contributing $10,807,000 in 1952; and 55 contributing $14,266,000 in 1953.

Training Pakistan Health Visitors—UNICEF and WHO are cooperating with the government of Pakistan and have undertaken an intensive program of training community health visitors. Projects are already in operation in Lahore, Decca, and Peshawar and a new one has recently been organized in Karachi. A 27-month course trains young women for work that includes home visits to improve community health practices, assistance to expectant mothers and instruction in the care of newborn infants. It is planned that 30 visitors will be trained annually.

UNICEF is providing equipment, WHO has assigned an international team of four public health nurses and one physician, while the Pakistan government is providing national personnel who will eventually take over operation of the program. It has also constructed a new building as a center for the program.

Comedian Assists UNICEF—Indicating as his reason, his belief in children as the "common denominator" throughout the world, the comedian, Danny Kaye, on April 19 began a tour of UNICEF-aided projects in Asia at his own expense. He made a color movie of UNICEF help to children in India, Burma, Siam, Hong Kong, and Japan, which he is now narrating in several languages in the United States.

Meeting of Executive Board

The Executive Board of WHO met in Geneva on May 27 and 28, immediately after the close of the Seventh World Health Assembly. It elected Dr. H. van Zile Hyde of the U. S. Public Health Service as its chairman for the coming year succeeding Dr. Melville Mackenzie, principal medical officer, British Ministry of Health. Two vice-chairmen were elected, Professor O. Andersen of Copenhagen and Dr. M. J. Ferreira of Rio de Janeiro; and two reporters, Dr. Rachad Pharaon, Saudi Arabia's am-

bassador to France, and Dr. H. B. Turbott, deputy director general, New Zealand Department of Health. May 10, 1955, was selected as opening date of the Eighth World Health Assembly in Mexico City . The selection of Copenhagen was approved as the site of WHO's European Regional Office, which has had temporary headquarters, together with the parent organization, in the Palais des Nations at Geneva.

The board decided that WHO's increased environmental sanitation activities should be concentrated on the problem of safe water supplies and the disposal of human waste and refuse. It also released the reports of several expert committees on: onchocerciasis, vaccination against tuberculosis, health education, nursing, and medical examination of migrants. These reports are designed for technical advice and guidance for national health services and public health workers.

Environmental Sanitation Number

A recent Bulletin of the World Health Organization (10:2, 1954) is devoted wholly to environmental sanitation. Thus is emphasized what is said in the introduction, that "the importance of environmental sanitation as an ally of other branches of public health in the control of preventable diseases is now recognized by health officials in most parts of the world." It further states that the movement to create environmental sanitation services and train qualified personnel is "gaining increasing momentum."

Stressing "the capital importance of a sound, parallel program for the health education of the public," the lead article by Mayhew Derryberry of the Public Health Service is on "Health Education Aspects of Sanitation Programs in Rural Areas and Small Communities." Mark Hollis, also of the PHS, discusses "Economic Aspects of Rural Sanitation in the United States." Other aspects of environmental sanitation experience are discussed by experts from Brazil, Colombia, Denmark, France, Italy, and Yugoslavia. Notes and reports on sanitation status and activities in many parts of the world, chiefly Europe, are included. Columbia University Press, 2960 Broadway, New York 27, N. Y.; $1.50 per copy; $9 annual subscription.

Ethnology and Public Health

"The Man We Cannot Do Without" or "The Ethnologist's Part in the Health Team" by Dr. Pierre Dorolle, WHO's deputy director-general, discusses a five-point program as outlined by the ethnologist attached to the Regional Office for Africa. The culture, the traditional religious and other beliefs, attitudes, and practices must be understood in order to carry on health activities effectively. Dr. Dorolle, whose article appears in the April, 1954, issue of the WHO Newsletter cites many instances of the conflict between local mores and health practices. An infirmary is not used because the local geomancer was not consulted in its orientation; hence its doors open in the direction from which malevolent spirits come. Pregnant women (in Ecuador) do not use the maternity hospital; it is well aired and fresh air is considered bad for pregnant women. The entire article has many interesting illustrations. The corollary is that health education is more than films, posters, lectures, pictures; it is first of all understanding.

List of Social Publications

A leaflet describing a number of publications prepared by the Department of Social Affairs of the United Nations has been issued by UN's Department of Public Information. Included are a number of items relevant to public health—population trends, population

bulletin, the 1953 demographic year book, bulletin on narcotics, and a handbook of international measures (including health) for protection of migrants. The leaflet is available from the United Nations, New York; the documents themselves from the UN sales agent in the United States, Columbia University Press, 2960 Broadway, New York 17, N. Y.

Danish National Morbidity Survey

With the assistance of a Rockefeller Foundation grant a three-year survey of morbidity in Denmark was begun in June, 1951. Since 1952, the survey has been working under the auspices of WHO which has provided consultant service, fellowships, and supplies. WHO's Regional Office for Europe has designated the survey as an international demonstration.

The first comprehensive publication in English about the survey has recently been issued. Entitled "The Danish National Morbidity Survey of 1950, Communication No. 2," it covers the report for the first year of the investigation, 1951–1952. Included also is "The Sample Design for the Danish Health Survey." A sample of the population over 15 years of age is being studied by interviews. Over the three-year period, it is expected that more than 100,000 questionnaires will be completed for outlining "a reliable picture of the health of the population." No information as to availability of the report.

California's Sickness Survey

The California State Health Department in May began a project to measure the volume and distribution of illness and disability in the general population. The over-all objective is to develop, test, and evaluate on a state-wide basis methods of measuring current morbidity. Five years of planning and preliminary work in a pretesting survey in San Jose and its surrounding rural area in Santa Clara County preceded the present phase of the study. Results of this are still to be published.

The present survey is being carried on with the aid of a grant from the Public Health Service and is being directed by Lester Breslow, M.D., director of the department's Bureau of Chronic Diseases. Field work is being done by 24 interviewers loaned by the Bureau of the Census, who are checking on 35,000 persons in 12,000 families throughout the state in door-to-door interviews. A 13-member Survey Advisory Committee includes representatives of both the State Departments of Employment and of Industrial Relations, as well as medical schools, schools of public health, medical and hospital care services, and medical societies. Charles E. Smith, M.D., dean, Edward S. Rogers, M.D., professor of public health and medical administration, and Jacob Yerushalmy, Ph.D., professor of biostatistics of the University of California School of Public Health, serve on the committee, as do Rodney R. Beard, M.D., professor of public health and preventive medicine, Stanford Medical School, and the Alameda City health officer, David Frost, M.D.

(For an early report of this project see California Morbidity Research Project, Arthur Weissman, A.J.P.H., 42, 6:711 (May), 1952).

Health Legislation in Michigan

Michigan's Health for March summarizes the health legislation passed by the latest legislative session. Among the bills passed were the following:

1. Tuberculosis suspects may be ordered by the courts to submit to an examination, and escape following probate court commitment to a sanatorium is made a misdemeanor.
2. Drug addiction is recognized as a disease rather than a criminal act. The state health

commissioner is empowered to petition the courts to have drug addicts committed for treatment rather than sent to jail.

3. The formula for distribution of state funds for support of local health departments has been consolidated into a single act. The formula provides a basic grant not to exceed $5,000 for each county supporting an approved health department. If any appropriation is available beyond this, 15 per cent may be applied to training for local health work. Beyond this any available funds are distributed on a per capita basis to counties and cities with approved health departments.

4. County welfare boards are empowered to establish and operate medical care facilities.

National Advisory Committee Meets

The National Advisory Committee on Local Health Units of the National Health Council met in New York on May 25. About 70 persons representing 42 of the agencies that participate in the work of the National Advisory Committee attended. Background information on the theme, "Financing Local Governmental Health Services," was given respectively by Dr. Berwyn F. Mattison, health officer of Erie County, New York, on local; Dr. Leroy E. Burney, health officer of Indiana, on state; and Dr. Jack C. Haldeman of the Public Health Service, on federal aspects of financing local health services.

The points stressed by these three speakers included the necessity for a clear understanding by citizens of what public health services are, the need for broad citizen and organization participation in planning for health services, and thorough citizen understanding of the sources of support—and their implications—of community health services.

The three discussion groups devoted themselves to the question: "What can the National Advisory Committee and the resources it represents do to help assure adequate financing of local governmental health services?" The discussion leaders and recorders for the three were, respectively, Esther Brieselmeister, Young Women's Christian Association, National Board, and Arthur Kneerim, Metropolitan Life Insurance Company; Morey Fields, American School Health Association, and Dorothy Schober, American Heart Association; Dorothy Rusby, R.N., National League for Nursing, and Violet Sieder, Community Chests and Councils of America. The group discussions were reported and summarized in a plenary session led by Dr. Roscoe P. Kandle, New York City's deputy health commissioner and former field director of the American Public Health Association.

The groups recommended state meetings stimulated by councils or other state organizations to discuss the cuts in federal grants-in-aid, their effect upon local health services, and what citizen action is needed. They further recommended local surveys of health needs and resources as useful procedures for educating citizens as to their primary responsibility in improving and financing local governmental health services. In this connection, "The Guide to a Community Health Study" of the American Public Health Association was recommended as a useful tool.

The Advisory Committee accepted the invitation of the National Health Council's Committee on State and Local Health Councils to join in selecting a joint working party to consider and develop recommendations for a close working relationship between the two committees in their activities for stimulating adequate community health services.

William P. Shepard, M.D., vice-president of the Metropolitan Life Insurance Company, was the luncheon speaker. He summarized the March forum of the National Health Council on "Changing Factors in Staffing America's Health Services." Out of this forum grew "Operation Health Careers Horizon" (A.J.P.H. 44, 7:908 (July), 1954).

Fluoridation Census

According to a survey conducted by Water Works Engineering, 500 water systems in the United States were fluoridating their water as of January, 1954. The population served by the 500 systems in 41 states and the District of Columbia is almost 17,000,000. Of seven states without at least one fluoridation plant, two have one or more systems in the planning stage and three have naturally fluoridated water. The number of fluoridation plants had doubled since July, 1952. The survey shows that sodium silico fluoride was used in nearly 60 per cent of the systems and sodium fluoride in all the others except in 45 that reported other compounds. Water Works Engineering, May, 1954, 24 West 40, New York 18.

100 Years of Women in Medicine

The 1954 Elizabeth Blackwell Citations of the New York Infirmary, New York City, celebrating its 100th anniversary, have been awarded to nine women physicians as follows:

Dorothy H. Andersen, assistant professor of pathology, Columbia University, for her distinguished achievement as a pediatric pathologist.

Emily Dunning Barringer, retired, for her distinguished achievements in the practice of gynecology and her successful efforts in behalf of women. Dr. Barringer was also the first woman ambulance surgeon.

Madelaine Ray Brown, associate neurologist, Massachusetts General Hospital and first woman interne at Boston City Hospital, for her distinguished achievements in research and in the practice and teaching of neurology.

Mary M. Crawford, retired, for her pioneer work as founder and director of the medical department, Federal Reserve Bank of New York.

Jessie Gray, chief of surgery, Women's College Hospital, Toronto, the first woman to graduate with a gold medal in medicine at the University of Toronto, first woman resident at Toronto General Hospital, and first woman to become a Fellow, Royal College of Surgeons, Canada, in recognition of her position as the leading woman surgeon of Canada.

Alice Freeland Maxwell, associate clinical professor of gynecology, University of California, for her achievements in the teaching and practice of gynecology and obstetrics.

Jane Sands Robb, Woman's Medical College of Pennsylvania, for her contributions to the knowledge of the anatomy and physiology of the heart.

Helen B. Taussig, associate professor of pediatrics, Johns Hopkins School of Medicine and a Chevalier Legion d'Honneur, for her unique contribution to the knowledge of congenital malformations of the heart and to their surgical correction.

Priscilla White, associate of Elliott P. Joslin, M.D., since 1924 and instructor in pediatrics, Tufts Medical College, in recognition of her position as the country's leading authority on diabetes in children.

Cornerstone Laid for Baltimore's Eastern Health District

The cornerstone was laid on May 25 for the Eastern Health District building which will involve expenditures of about a million dollars and provide services for the eastern area of Baltimore in the vicinity of the Johns Hopkins School of Hygiene and Public Health. The Eastern Health District has been in operation since 1932 in temporary quarters.

Dr. Huntington Williams, commissioner of health, has announced that a proposed bond issue of one million dollars for a Western Health District building in Baltimore will be on the ballot for the voters in the fall.

Varrier-Jones Memorial Lectureship

Harold Guyon Trimble, M.D., consultant, diseases of the chest, Alameda County (Calif.) institutions, was the 1954 and third Varrier-Jones Memorial lecturer of the Papworth Village Settlement. His lecture was given at Manson House, London. Dr. Trimble is the first physician outside of England chosen for this biennial Memorial Lectureship, commemorated also by presentation of a Memorial Medal. His topic was "Cur-

rent Treatment of Tuberculosis in the United States," summarizing a study made by Dr. Trimble and his associate, Lloyd Eaton, M.D., under the auspices of the American College of Chest Physicians.

Dr. Trimble also represented the American College of Chest Physicians at the Seventh World Health Assembly in Geneva. In Switzerland he addressed the Medical Society of Leysin; in Germany he was guest speaker at the Southwest German Tuberculosis Conference in Wildbad.

Brookline Rotary Club Awards

The Rotary Club of Brookline, Mass., recently presented Distinguished Public Service Awards to Brig. Gen. James Stevens Simmons, U. S. Army (retired), dean, Harvard School of Public Health, for achievements and leadership as a scientist, administrator, and educator in the fields of preventive medicine and public health, and to Sidney Farber, M.D., scientific director of the Children's Cancer Research Foundation, for achievements and leadership in the field of research on problems of children's diseases, particularly cancer. Each is a Brookline resident.

ADA on the Anti-Fluoridation Bill

The American Dental Association has prepared an Information Bulletin on H.R. 2341, a bill that would outlaw fluoridating public water supplies as is now done by 944 cities and towns in the United States with a total population of nearly 17,000,000. Another 3,500,000 persons live in communities where the water has been naturally fluoridated for generations. The Information Bulletin gives all the facts—the findings of extensive research, the stand of numerous professional organizations, and suggests that a community decide for itself whether its water supplies shall contain fluoride ions as a preventive of dental caries. Hearings on the bill were held by the House Interstate and Foreign Commerce Committee, Charles A. Wolverton, chairman, May 26–28.

The Information Bulletin is available from the American Dental Association, 222 E. Superior St., Chicago 11, Ill.

New Headquarters, New York Visiting Nurse Service

The Visiting Nurse Service of New York has recently occupied its new office quarters at 107 East 70th Street, Manhattan, the former home of the Thomas W. Lamont family which was bequeathed by Mrs. Lamont "in recognition of the important role the Visiting Nurse Service of New York has played in the field of public health and the great work it is doing for the sick of New York City of every race, creed and color." In accepting the gift the VNSNY expressed their intention "to adapt the house to serve as the administrative headquarters of the organization, in this way dedicating the Lamont home not only to the service of the people of New York, but also to the cause of public health nursing and nursing education everywhere." Marian G. Randall, R.N., is the executive director, in which position she has just completed ten years.

Fluoridation in the High Courts

The U. S. Supreme Court on June 7, 1954 (22 L.W. 3323) denied review in the case of de Aryan v. Butler. In this case, the California courts upheld the action of the municipal authorities of San Diego in ordering fluoridation of the public water supply. 260 P(2nd) 98 (1953). The Supreme Court refused to review the conclusions reached by the state courts, which were challenged by the petitioner, that the program (1) represents a valid exercise of the police

power and (2) does not violate constitutional guarantee of individual religious and other freedoms.

The effect of this decision is to dispel the constitutional uncertainities about this field of public health activity. The way is thus cleared for the consideration of fluoridation proposals on their merits, within the framework of state and local authorizing statutes. In such litigation the contention has been that fluoridation of the public water supply in order to promote dental health constitutes "mass medication." As such it is said to represent a form of compulsion that constitutes a deprivation of liberty and, as applied to persons who object to medication on religious grounds, a deprivation of religious liberty as well.

The de Aryan case in the opinion of legal authorities, indicates that the Supreme Court is content to leave undisturbed, so far as fluoridation of public water supplies is concerned, the distinction, which it has recognized in other fields, between compulsions that are imposed directly upon individual conduct and those that are indirect or incidental to a publicly furnished service.

The constitutional issues in the de Aryan case, i.e., those of police power and of individual freedom were considered last October also by the Court of Common Pleas of Cuyahoga County of Ohio in the case of Kraus v. City of Cleveland. 116 N. E. (2nd) 779 (1953). The court said:

> The right of an individual to treat one's health as he deems best, as claimed by the plaintiff, is a right which he must yield to the common good, where a state, or local subdivision, in the lawful exercise of its police power, enacts a public health measure, deemed necessary for the promotion of the health of a substantial segment of its population.

This affirms that the police power may include measures, not only to restrain actions inimical to health, but to promote health by reasonable measures when a broad community interest is involved.

Similar constitutional issues were involved in McFarlane v. Baltimore City in which the complaint was dismissed by the Circuit Court of that City in 1952. So far as the Journal is informed, none of the actions brought on various grounds and in various localities to restrain local authorities acting under proper authorization from putting fluoridation measures into effect has met with success in any court.

American Heart Association Awards

Bronze Medallion Awards of Merit of the American Heart Association were presented to Lillian M. Gilbreth, Winthrop W. Aldrich, and Alton L. Blakeslee at a recent luncheon of the association's Board of Directors in New York City. Presentation was by E. Cowles Andrus, M.D., president of the association. The awards are given annually for outstanding service to the heart program.

Dr. Gilbreth, a pioneer in the application of the principles of industrial management to management in the home, directed the creation of the New York Heart Association's "Heart Kitchen," the forerunner of the American Heart Association's national program of work simplification for the cardiac housewife. Mr. Aldrich, U. S. Ambassador to the Court of St. James, served as national campaign treasurer for the Heart Fund from 1949 to 1952. Alton W. Blakeslee, science reporter for the Associated Press, was honored for helping to develop greater public understanding of advances in the cardiovascular field through his conscientious and accurate reporting.

PERSONALS

Mohamed A. Abassy, M.D., D.P.H., professor of hygiene and preventive medicine, Faculty

of Medicine, Alexandria, Egypt, has been visiting the United States under a travel grant from the Rockefeller Foundation.

MARGUERITE ABBOTT,† former executive director of the Coordinating Council for Cerebral Palsy in New York City, is now technical associate to the medical director, United Cerebral Palsy of New York City, Inc.

ISIDORE ALTMAN,* former biostatistician, Division of Public Health Methods, Public Health Service, is now statistical consultant, Program Division, United Cerebral Palsy Associations, New York City.

ELTON N. ANDREW, sanitarian, Montana State Board of Health, has resigned to take a position in private business in Helena and has been succeeded by VERNON E. SLOULIN,† who has been in the Division of Environmental Sanitation since 1951.

FRITJOF H. ARESTAD, M.D., associate secretary of the American Medical Association's Council on Medical Education and Hospitals, has resigned in order to become medical administrator of the Johnstown, Pa., area, Welfare and Retirement Fund of the United Mine Workers of America.

MAJOR GENERAL HARRY G. ARMSTRONG, Air Force Surgeon General since December 1949, has been awarded the Distinguished Service Medal for exceptional professional and executive ability during his service in Air Force Headquarters from December, 1949, to July, 1954, in supervising preventive and aviation medicine, aeromedical evacuation, and the operation of a worldwide hospital system. General Armstrong has transferred to United States Air Forces in Europe as Surgeon General.

MARGARET BASHAM is a new health educator in the Cancer Control Section, Kentucky State Health Department.

ROBERT W. BERLINER, M.D., former chief, Laboratory of Kidney and Electrolyte Metabolism, has been appointed associate director in charge of research at the National Heart Institute succeeding JAMES A. SHANNON, M.D.,† now associate director, National Institutes of Health, of which the Heart Institute is a unit.

ETIENNE BERTHET, M.D., WHO tuberculosis adviser to the Government of Syria since May, 1952, and a member of the National Tuberculosis Association, has been named director-general, International Children's Centre, Paris.

N. BERNETA BLOCK, M.D., M.P.H.,† Sandusky-Erie County, Ohio health commissioner has resigned.

HELEN BURKE,* former executive secretary, Colorado Tuberculosis Association, Denver, is the recipient of the 1954 James J. Waring Award of the Colorado Conference of Tuberculosis Workers for outstanding contributions to tuberculosis control in the state.

LOUISE G. CAMPBELL,* executive secretary of the New York City Hospital Visiting Committee of the New York State Committee on Tuberculosis and Public Health, State Charities Aid Association, has returned to the National Tuberculosis Association, New York City, as field demonstrator.

LOUISE CARDINEAU, assistant district supervising nurse, Saranac Lake district, New York State Health Department, has been appointed director of nurses in the newly established Clinton County Health Department.

RUSSELL L. CECIL, M.D., emeritus professor of medicine, Cornell University Medical College and a consultant to New York Hospital and Bellevue Hospital Center, has been appointed medical director, Arthritis and Rheumatism Foundation, New York, N. Y.

ANNE CHAPMAN, former assistant professor of nursing, University of Mississippi, has been appointed an associate administrator of the Memorial Hospital Association of Kentucky, Washington, D. C., to be responsible for nursing services and nursing education in the integrated system of 10 general hospitals being developed by the Welfare and Retirement Fund, United Mine Workers of America.

ALBERTA CHASE,† executive director, Missouri Society for Crippled Children and Adults for over 27 years, has retired. She will attend the 6th World Congress of the International Society for the Welfare of Cripples at The Hague in September.

W. KENNETH CLARK, M.D., chief, Division of Cancer Control, Pennsylvania Department of Health, has resigned to become assistant medical and scientific director, American Cancer Society, New York, N. Y.

EDWIN L. CROSBY, M.D.,* executive director of the American Hospital Association, Chicago, Ill., has been awarded an honorary Doctor of Science degree by Union College, his alma mater.

PROFESSOR VINCENT DU VIGNEAUD, chairman, Department of Biochemistry, Cornell University Medical College, New York City, and 1948 winner of an APHA Lasker

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* Fellow.
† Member.

Award, presented the 1954 Remsen Memorial Lecture of the American Chemical Society's Maryland Section at the Johns Hopkins University on May 21.

JOHN E. ELMENDORF, JR., M.D.,* of the staff of the Rockefeller Foundation in Colombia, South America, received an honorary degree from Rutgers University, N. J., at its commencement on June 9.

OVIDIA T. EVENSEN, R.N.,* formerly administrative public health nursing assistant, Wayne County (Mich.) Department of Health, is now public health coordinator and director of student health services, School of Nursing, Highland Park General Hospital, Highland Park, Mich.

ARTHUR J. FARRELL† has received the annual Oregon Public Health Association award "for consistently faithful and loyal service as a plumbing inspector of the Oregon State Board of Health since 1935;—and on raising the plumbing standards in Oregon from a low national average to the highest in the nation."

WILLIAM A. FEIRER, M.D., D.Sc.,* vice-president for scientific affairs, E. R. Squibb & Sons, New York City, received an honorary degree from Rutgers University at the commencement exercises on June 9.

ANN FOX, secretary, Educational Committee, Illinois State Medical Society, Chicago, has received the Mate E. Palmer Award of Merit of the Illinois Woman's Press Association for "the best column in a weekly paper," Health Talk, the publication of the Educational Committee.

MELVIN B. GOODMAN, M.D.,† associate public health physician, research unit of the New York State Mental Health Commission, has resigned to accept a postdoctoral National Institute of Mental Health fellowship for further clinical training in psychiatry in the Department of Psychiatry, Yale-New Haven Medical Center.

JOHN E. GORRELL, M.D.,† for the past eight years associate professor, Columbia University School of Public Health, has resigned to become director of medical services, National Foundation for Infantile Paralysis, New York, N. Y.

ALBERT S. GRAY, M.D.,* deputy commissioner of health of Connecticut, has been made medical coordinator for the Pennsylvania State Council of Civil Defense.

ARTHUR J. GRIMES,† U. S. Public Health Service, formerly assigned as a program representative to the South Carolina State Health Department is now assigned to the V.D. Section of the New Jersey Health Department to assist in the Newark mass blood-testing program.

CHARLES HAYMAN, M.D.,† former deputy state and Harford County (Md.) health officer, is now deputy commissioner of health, Territory of Alaska, and chief of the Health Department's Preventive Medical Services Section, Juneau, succeeding JOHN CARSWELL, M.D., resigned to return to the United States.

JOHN C. HOFF, bacteriologist, Montana State Board of Health, since October, 1952, has resigned to begin graduate study in bacteriology at Utah State College, Logan.

WILLIAM A. HOLLA, M.D.,† Westchester County health commissioner since 1942, has been presented with an engraved scroll "in recognition of his achievements in public health" by the Westchester Pharmaceutical Association.

JOUKO HUTTUNEN, M.D., public health officer of Hyvinkaa, Finland, visited the offices of the American Public Health Association in May in connection with his attendance at the Rotary International meetings.

WILLIAM P. JACOCKS, M.D., Dr.P.H.,† former director, Nutrition Division, North Carolina State Department of Health and former staff member, International Health Division, Rockefeller Foundation, now of Chapel Hill, N. C., received an honorary degree from the University of North Carolina at its June commencement exercises.

VIRGINIA KENNY, Brookline, Mass., has received the 1954 Kenfield Memorial Scholarship of the American Hearing Society given annually to a prospective teacher of lip reading to the hard of hearing.

CARL C. KUEHN, M.D., M.P.H.,† formerly deputy director, Pittsburgh Health Department, has been named director of local health services to head one of the three chief administrative posts recently created in the Pennsylvania State Department of Health.

ANNE N. LEE, R.N., former district supervising nurse with the State Health Department, has been appointed director of nursing, Schoharie County (N.Y.) Health Department.

B. LIBER, M.D., Dr.P.H.,* assistant neuropsychiatrist and director, Mental Hygiene Clinic, Polyclinic Hospital (New York City), was among the members of the Medical Society of the State of New York who received at its recent annual meeting a certificate honoring him for "fifty years devoted to the service of the public in the practice of medicine."

CLARENCE COOK LITTLE, Sc.D., director of the Roscoe B. Jackson Memorial Laboratory,

* Fellow.
† Member.

Bar Harbor, Maine, has been named also scientific director of the newly organized Tobacco Industry Research Committee and chairman of the committee's seven-man Scientific Advisory Board.

KARL R. LUNDEBERG, M.D.,* recently released from the U. S. Army Medical Corps, has succeeded F. J. HILL, M.D., M.P.H.,† as commissioner of health, Minneapolis, Minn.

ANNA MALAFRONTE, former vocational counselor, Brooklyn Bureau of Social Service, and Children's Aid Society, is now rehabilitation counselor, New York Tuberculosis and Health Association, New York City.

KARL M. MASON,* director of professional training since 1951, has been appointed director of environmental health services, Pennsylvania State Department of Health, Harrisburg, one of three bureaus in which all operating activities of the department are grouped.

BLEECKER MARQUETTE,* executive secretary of the Public Health Federation and the Better Housing League of Cincinnati, has resigned both posts to become a consultant for these organizations, for the National Housing Conference, as well as for several national health organizations. He has directed the Better Housing League since 1918 and the Federation since 1921.

KENNETH F. MAXCY, M.D., Dr.P.H.,* professor of epidemiology at the Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md., for the last eighteen years, has retired, effective July 1.

EDGAR M. MEDLAR, M.D., principal pathologist, Division of Tuberculosis Control, New York State Department of Health, has been named 1954 recipient of the Trudeau Medal, awarded annually by the National Tuberculosis Association in recognition of "the most meritorious contribution on the cause, prevention or treatment of tuberculosis" in the field of science.

FRIEND LEE MICKLE, Sc.D.,* director, Bureau of Laboratories, Connecticut State Department of Health, Hartford, retired June 1 after a long service. Dr. Mickle is a vice-president of the American Public Health Association in 1954.

J. THOMAS MILLINGTON, M.D., M.P.H.,† former director of the state health district of Luzerne County, has been named director of preventive services, Pennsylvania State Department of Health, Harrisburg, one of three administrative bureaus in the reorganized department.

BILLYANNA NILAND, D.D.S., for the past year on a teaching assignment in children's dentistry at the University of Malaya in Singapore, has been appointed a public health dental officer in the Division of Dental Health, California State Department of Health, San Francisco.

AGNES OHLSON, chief examiner, Connecticut State Board of Examiners for Nursing, and former secretary of the association, was elected president of the American Nurses' Association at its annual convention in April.

MITCHELL V. OWENS, health educator, Montana State Health Department, has resigned to take a position as a health educator with an American petroleum company in Arabia.

JOHN R. PAUL, M.D.,* professor of preventive medicine, Yale University School of Medicine, New Haven, has received the Howard Taylor Ricketts Medal of the University of Chicago.

JOHN D. PORTERFIELD, III, M.D., M.P.H.,* former director, Ohio Department of Health, Columbus, resigned June 30 to accept the position of director, Ohio Department of Mental Hygiene and Correction, an agency of state government created effective July 1. He has been succeeded by acting director, RALPH E. DWORK, M.D., M.P.H.,* formerly chief, Divisions of Tuberculosis and Chronic Disease in the Ohio department.

A. DANIEL RUBENSTEIN, M.D., M.P.H.,* has been promoted to the position of associate clinical professor of epidemiology, Harvard School of Public Health, Mass.

THORNDIKE SAVILLE, M.D.,* dean of the College of Engineering, New York University, has received the 1954 Lamme gold medal and bronze replica of the American Society for Engineering Education "for excellence in teaching and contributions to the art of teaching, and achievements which contribute to the advancement of the engineering profession."

F. TORRES-BRACAMONT, M.D.,* the director general of health of Bolivia, La Paz, visited the offices of the APHA on June 1.

JOHN A. TRAUTMAN, M.D., director of the clinical center, Public Health Service's National Institutes of Health in Bethesda, Md., has been named medical officer in charge of the Public Health Service Hospital in Fort Worth, Tex. He has been succeeded by DONALD W. PATRICK, M.D., formerly medical officer in charge of the Public Health Service Hospital in Baltimore.

ANN ELIZABETH SHEA,† former nutritionist, Frances Stern Food Clinic, New England Medical Center, Boston, has been appointed

* Fellow.
† Member.

nutritionist, Bureau of Nutrition, New York State Health Department.

FRANK VICTOR,† chief serologist, Division of Public Health Laboratories, Kansas State Board of Health, has been elected president, Missouri Valley Branch, Society of American Bacteriologists.

BEULAH TEMPLE WILD,† former secretary, Health Division, Community Council of Houston and Harris County, Tex., has been named director, Planning Unit, United Community Services, Omaho, Neb.

ALLEN T. WILLIS, D.D.S., M.P.H.,† who has just completed a year's graduate study at the University of Michigan School of Public Health, is now director, Division of Dental Health, Montana State Board of Health.

ROBERT YOHO,* director of the Bureau of Health Education, Records, and Statistics, Indiana State Board of Health, has been elected president of the Society of State Directors of Health, Physical Education and Recreation and vice-president for health education of the American Association for Health, Physical Education and Recreation.

DEATHS

BAILEY B. BURRITT, LL.D.,† retired executive director, Community Service Society of New York, on June 18 at the age of 76 (Public Health Education Section).

E. TAYLOR DYKES, D.D.S.,* public health dental officer, California State Department of Health, Los Angeles (Dental Health Section).

ALLEN W. FREEMAN, M.D.,* professor emeritus of public health administration, Johns Hopkins University, and consultant in public health administration, Maryland State Department of Health, Baltimore, on July 3. Dr. Freeman was a Charter Fellow of the American Public Health Association and its president in 1943 (Epidemiology Section).

T. H. VALENTINE, M.D.,† health officer, Brunswick-Greensville-Mecklenburgh Health District, Virginia (Health Officers Section).

VERNON G. WAIT,* sanitary inspector and city sanitarian, City Department of Public Health, Pontiac, Mich. (Engineering Section).

BENJAMIN F. WYMAN, M.D.,* state health officer, South Carolina State Board of Health, on June 18 (Health Officers Section).

* Fellow.
† Member.

CONFERENCES AND DATES

American Public Health Association. Headquarters: Memorial Auditorium, Buffalo, N. Y. October 11–15.

State and Regional Public Health Meetings:

Arkansas Public Health Association. Marion Hotel, Little Rock, Ark. October 28–29.

Florida Public Health Association. Roney Plaza Hotel, Miami Beach, Fla. October 21–23.

New England Health Institute. Burlington, Vt. August 25–27.

North Carolina Public Health Association. Sir Walter Hotel, Raleigh, N. C. September 23–25.

Pennsylvania Public Health Association. Pennsylvania State University, State College, Pa. August 18, with Third Annual Health Conference, August 16–19.

Meetings of Other Organizations Coming in August, September, and October:

American Academy of Pediatrics. Chicago, Ill. October 3–7.

American Cancer Society. Hotel Roosevelt, New York, N. Y. October 17–24.

American Chemical Society. New York, N. Y. September 12–17.

American Council on Education. Chicago, Ill. October 14–15.

American Dietetic Association. Philadelphia, Pa. October 26–29.

American Heart Association and Second World Congress of Cardiology. Washington, D. C. September 12–17.

American Hospital Association. Chicago, Ill. September 13–16.

American Society of Planning Officials. Benjamin Franklin Hotel, Philadelphia, Pa. September 26–30.

American Veterinary Medical Association. Seattle, Wash. August 23–26.

Arthritis and Rheumatism Foundation. New York, N. Y. October 4.

Association of American Medical Colleges. Bedford Springs, Pa., October 25–27.

Congress of International Association for the Prevention of Blindness. New York, N. Y. September 12–17.

Family Service Association of America (Biennial Meeting). Los Angeles, Calif. September 7–10.

Federation of Sewage and Industrial Wastes Associations. Netherland Plaza Hotel, Cincinnati, Ohio. October 11–14.

International Congress of Cardiology (Second). Washington, D. C. September 12–15.

International Congress of Industrial Medicine. Naples, Italy. September 13–19.
International Congress on Mental Health (Fifth) and International Institute on Child Psychiatry. Toronto, Canada. August 14–21.
International Poliomyelitis Conference (Third). Rome, Italy. September 6–10.
International Society for the Welfare of Cripples (Sixth World Congress). The Hague, Netherlands. September 13–17.
International Union Against Tuberculosis. Madrid, Spain. September 26–October 2.
National Association for Mental Health. Hotel Statler, New York, N. Y. October 23–25.
National Association of Housing Officials. Philadelphia, Pa. October 10–14.
National Medical Association. Washington, D. C. August 9–13.
National Recreation Association. St. Louis, Mo. September 27–October 1.
National Rehabilitation Association. Baltimore, Md. October 24–27.
National Safety Council. Conrad Hilton Hotel, Chicago, Ill. October 18–22.
World Assembly for the Welfare of the Blind. Paris, France. August 5–14.
World Assembly of Youth. Singapore. August 16–27.
World Child Welfare Congress. Zagreb, Yugoslavia. August 30–September 4.
World Federation of Occupational Therapists, First International Congress. Edinburgh, Scotland. August 16–21.
World Population Conference (United Nations). Rome, Italy. August 31–September 10.

BOOK MANUSCRIPTS INVITED

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Oval Wood Dish Corp., Tupper Lake, N. Y.
Owens-Illinois Glass Company, Toledo, Ohio
Prudential Insurance Company of America, Newark, N. J.
Rip Van Winkle Clinic, Hudson, N. Y.
Ross-Loos Medical Group, Los Angeles, Calif.
St. Louis Labor Health Institute, St. Louis, Mo.
Sealright Company, Inc., Fulton, N. Y.
Sharp and Dohme, Inc., Glenolden, Pa.
E. R. Squibb and Sons, New York, N. Y.
Steiner Sales Company, Chicago, Ill.
Sun Life Insurance Company, Baltimore, Md.
Textile Workers Union of America, New York, N. Y.
Theatre, and Amusement Building Janitors' Union, Chicago Office, Chicago, Ill.
Travelers Insurance Company, Hartford, Conn.
UAW-CIO (United Automobile, Aircraft and Agricultural Implement Workers of America), Detroit, Mich.
Union Central Life Insurance Company, Cincinnati, Ohio
Upjohn Company, Kalamazoo, Mich.
Winthrop-Stearns, Inc., New York, N. Y.
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82nd Annual Meeting, American Public Health Association

October 11–15, 1954

Memorial Auditorium, Buffalo, N. Y.

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AMERICAN BOTTLERS OF CARBONATED BEVERAGES, Washington, D. C., Booth 513.

AMERICAN CAN CO., New York., N. Y., Booth 426.

AMERICAN HOSPITAL SUPPLY CORP., Evanston, Ill., Booth 537.

AMERICAN INSTITUTE OF BAKING, Chicago, Ill., Booth 323.

AMERICAN JOURNAL OF NURSING CO., New York, N. Y., Booth 521.

AMERICAN MEDICAL ASSOCIATION, TODAY'S HEALTH, Chicago, Ill., Booth 417.

AMERICAN OPTICAL CO., Buffalo, N. Y., Booth 334.

AMERICAN STERILIZER CO., Erie, Pa., Booth 611.

AMERICAN TOBACCO CO., New York, N. Y., Booths 523 and 524.

ASSOCIATION OF AMERICAN UNIVERSITY PRESSES, New York, N. Y., Booth 318.

ASSOCIATION CONVENTIONS EXHIBITS, New York, N. Y., Booth 621.

BABY DEVELOPMENT CLINIC, Chicago, Ill., Booth 428.

BALTIMORE BIOLOGICAL LABORATORY, INC., Baltimore, Md., Booth 633.

BECTON, DICKINSON & CO., Rutherford, N. J., Booth 634.

BENSON & HEDGES, New York, N. Y., Booth 514.

BORDEN CO., New York, N. Y., Booth 421.

BRISTOL-MYERS CO., New York, N. Y., Booth 430.

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CORNING GLASS WORKS, Corning, N. Y., Booth 536.

CREAM OF WHEAT CORP., Minneapolis, Minn., Booth 526.

D'ARMIGENE, New York, N. Y., Booth 522.

DIFCO LABORATORIES, INC., Detroit, Mich., Booth 412.

DIVERSEY CORP., Chicago, Ill., Booth 429.

EATON-DIKEMAN CO., Mount Holly Springs, Pa., Booth 416.

ECONOMICS LABORATORY, INC., St. Paul, Minn., Booth 212.

EVAPORATED MILK ASSOCIATION, Chicago, Ill., Booth 511.

Everest & JENNINGS, Los Angeles, Calif., Booth 607.

FLEISHER CHEMICAL CO., Washington, D. C., Booth 214.

E. FOUGERA & CO., INC., New York, N. Y., Booth 618.

GALVANIZED WARE MANUFACTURERS COUNCIL, Chicago, Ill., Booth 413.

GENERAL MILLS, INC., Minneapolis, Minn., Booth 519.

GIVEN MANUFACTURING CO., Los Angeles, Calif., Booth 215.

HAUSTED MANUFACTURING CO., Medina, Ohio, Booth 504.

HEINICKE INSTRUMENT CORP., Hollywood, Fla., Booth 619.

HOBART MANUFACTURING CO., Troy, Ohio, Booth 213.

HOMEMAKERS' PRODUCTS CORP., PHARMACEUTICAL DIV., New York, N. Y., Booth 411.

INTERNATIONAL CELLUCOTTON PRODUCTS CO., Chicago, Ill., Booth 507.

KEWAUNEE MANUFACTURING CO., Adrian, Mich., Booths 608 and 609.

KIMBLE GLASS CO., Toledo, Ohio, Booth 408.

LEDERLE LABORATORIES DIVISION., AMERICAN CYANAMID CO., New York, N. Y., Booths 501, 502 and 503.

LICENSED BEVERAGE INDUSTRIES, INC., New York, N. Y., Booth 508.

DIRECTORY OF EXHIBITS (cont.)

82nd Annual Meeting, American Public Health Association

October 11–15, 1954

Memorial Auditorium, Buffalo, N. Y.

ELI LILLY & Co., Indianapolis, Ind., Booth 317.

LILY-TULIP CUP CORP., New York, N. Y., Booth 324.

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M & R LABORATORIES, SIMILAC DIV., Columbus, Ohio, Booth 308.

MACALASTER BICKNELL PARENTERAL CORP., Cambridge, Mass., Booth 328.

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MALTEX Co., Burlington, Vt., Booth 414.

MCGRAW-HILL BOOK Co., INC., New York, N. Y., Booth 401.

MEDICAL COACHES, INC., New York, N. Y., Booth 307.

MENTAL HEALTH MATERIALS CENTER, INC., New York, N. Y., Booth 325.

MILES LABORATORIES, INC., MEDICAL & INDUSTRIAL SALES DIV., Elkhart, Ind., Booth 433.

MILES REPRODUCER Co., INC., New York, N. Y., Booth 629.

MILLIPORE FILTER CORP., Watertown, Mass., Booth 327.

C. V. MOSBY Co., St. Louis, Mo., Booth 410.

NATIONAL DAIRY COUNCIL, Chicago, Ill., Booth 506.

NATIONAL DRUG Co., Philadelphia, Pa., Booth 612.

NATIONAL LIVE STOCK & MEAT BOARD, Chicago, Ill., Booth 311.

NEW YORK TELEPHONE Co., Buffalo, N. Y., Booth 304.

NIGHTINGALE PRESS, INC., R.N. Journal for Nurses. East Rutherford, N. J., Booth 415.

ODARA PRODUCTS Co., INC., KARIDIUM DIV., St. Louis, Mo., Booth 306.

ORTHO PHARMACEUTICAL CORP., Raritan, N. J., Booths 601 and 602.

OVAL WOOD DISH CORP., Tupper Lake, N. Y., Booth 436.

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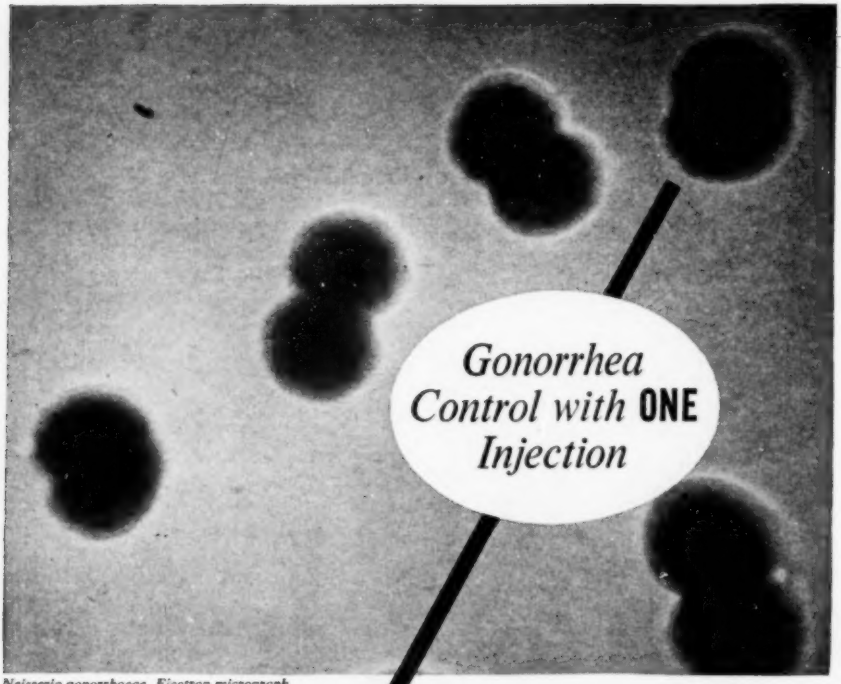

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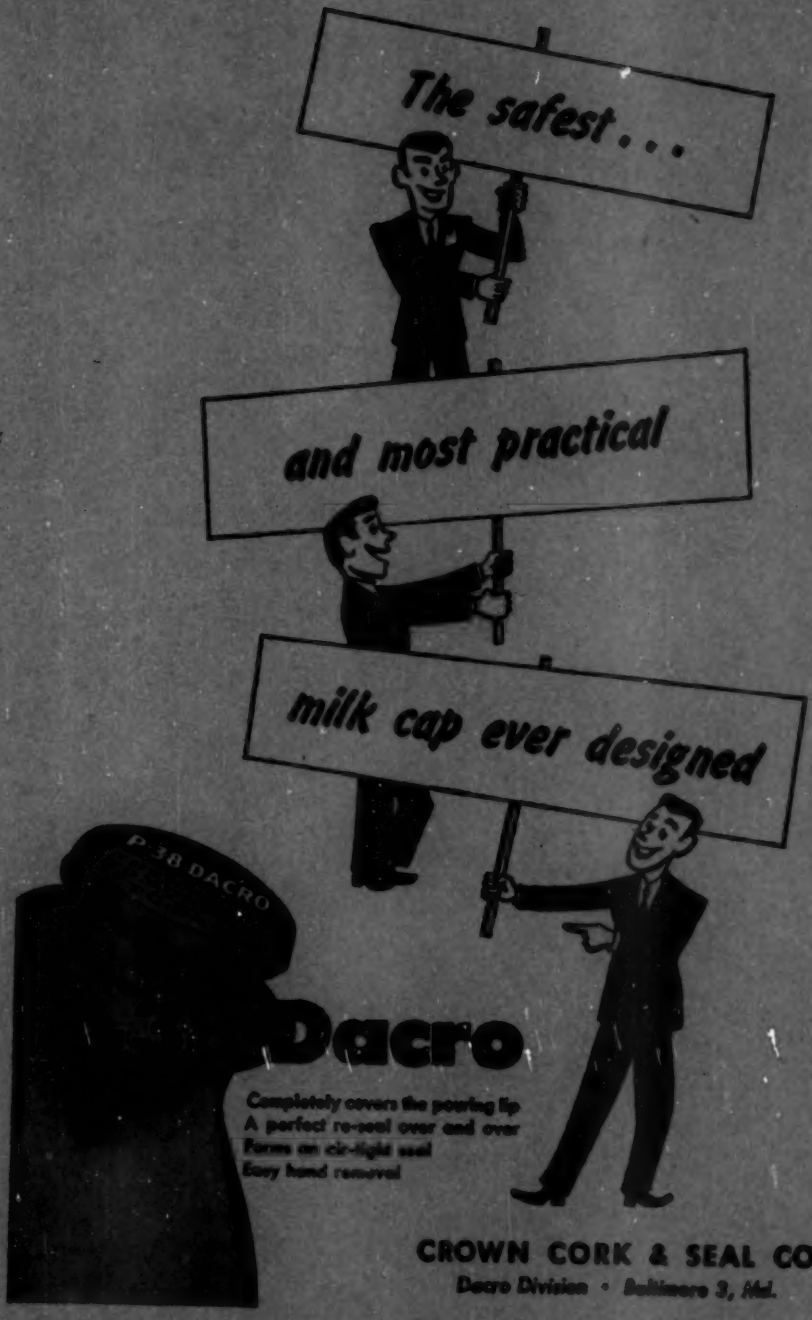

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